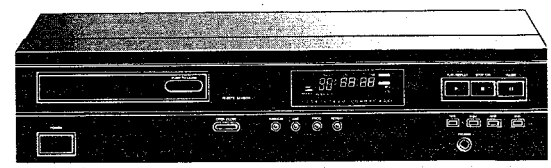
# Compact disc player 74CD40

/01B/02B/04B/05B

Service
Service
Service



# Service Manual

COMPACT disc DIGITAL AUDIO

**CONTENTS**


1. Controls and technical specifications
2. Servicing hints, disassembly of the set, exploded view, mechanical partslist
3. Measurements and adjustments
4. Wiring diagram, block diagram, circuit diagrams, PCB data partslist of display panel
5. Partslist


(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)
Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambiago identici a quelli specificati.

(F)
Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

CLASS 1
LASER PRODUCT
3122 110 03420


DocumentationTechnique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviçio

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agrées, seuls habilités à réparer votre appareil en panne".

Subject to modification
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Service Consumer Electronics

CS 25 251

## MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound.
Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

MARANTZ INTERNATIONAL
Vestdijk 9
5600 MD Eindhoven
The Netherlands
Phone: +31/40.758290
Telefax: +31/40.75.82.99
Telex: 35000 PHTC NL routing IND NLMTFAT

### ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified.
The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

**PARTS ORDERING**

Parts may be ordered at the following addresses:

**AUSTRIA**
HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

**BELGIUM**
SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

**CHILE**
MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
Santiago
Telex: 240.239

**DENMARK**
MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

**FINLAND**
MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

**FRANCE**
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

**GERMANY**
MARANTZ GERMANY GmbH
Max-Planck-Strasse 22
6072 Dreieich 1
Germany
Telex: 529821

**THE NETHERLANDS**
Elpro Marantz
Wint Hontlaan 28
3526 KV Utrecht
The Netherlands
Telex: 4748

**NORWAY**
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
0680 Oslo 6
Norway
Telex: 72640

**GREAT BRITAIN**
MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

**GREECE**
SHERTON ELECTRONICS S.A.
P.O.Box 21025
Hippocratus Street 188
Athens 11471
Greece
Telex: 216.795

**JAPAN**
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

**KUWAIT**
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

**ITALY**
MARANTZ ITALIANA S.P.A.
Via Chiese, 74
20126 Milano
Italy

**SAUDI ARABIA**
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 401530

**SOUTH AFRICA**
MARANTZ
DIVISION OF PHILIPS S.A.
Main Road Martindale
P.O. Box. 58088
Newville 21114
South Africa

**SPAIN**
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

**SWEDEN**
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

**SWITZERLAND**
DYNAVOX ELECTRONICS
Route de Villars 105
1701 Fribourg
Switzerland
Telex: 942377

**TURKEY**
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

**MALTA**
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

**PORTUGAL**
MARANTZ
Divisao philips S.A. service
Outurela-carnaxide
2795 LinDA-A-VELHA
Telex: 43906

**All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.**

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

Fig. 1

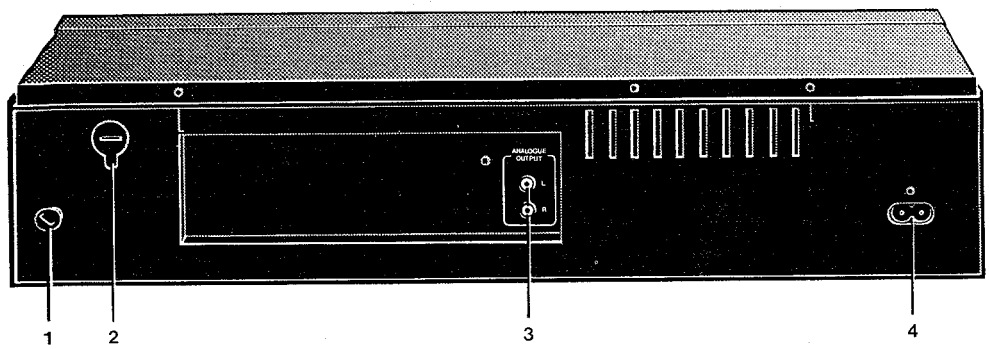
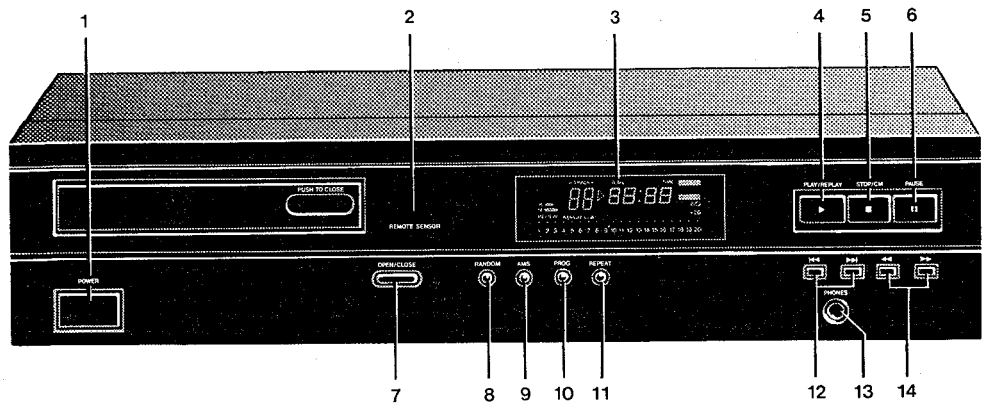



Fig. 2

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## CONTROLS

## CONNECTIONS (Fig. 1)

1 **Fuse holder**
(If voltage carousel has been mounted)

2 **Voltage selector**
(If voltage carousel has been mounted)

3 **ANALOGUE OUTPUT**
For the connection cable to the amplifier.
- Insert a red plug into the 'R' jack (right-hand channel) and the other plug into the 'L' jack (left-hand channel).
- Insert the two other plugs into the corresponding jacks of the CD or AUX input of your amplifier. You can also use the TUNER or TAPE IN connection, but **never** the PHONO input!

4 **Mains socket**
- Insert the plug of the mains lead cord supplied into the Mains Socket.
- Connect the other end to your mains supply.

## OPERATION

## FRONT OF PLAYER (Fig.2)

1 **POWER**
Switching on and off.

2 **REMOTE SENSOR**
Receives the signals from the remote control.

3 **DISPLAY**
Informs you about the functioning of the player.

4 **PLAY/REPLAY**
- Starting play (**PLAY**).
- Returning to the beginning of a track (**REPLAY**).

5 **STOP/CM**
- STOPPING PLAY (**STOP**).
- Erasing a programme (**CM** = Clear Memory).

6 **PAUSE**
Interrupting play.

7 **OPEN/CLOSE**
Opening and closing the disk tray.

8 **RANDOM**
Playing in a random order.

9 **AMS**
Autimatically playing the beginning of each track (**AMS** = Automatic Music Scan).

10 **PROG**(RAM)
- Storing tracks in a programme.
- Erasing track from a programme.
- Reviewing a programme.

11 **REPEAT**
Repeating a track, the entire disc or a programme.

12 ⏮ ⏭
Selecting:
- another track during play.
- a track to start play with.
- (⏮ from high to low; ⏭ **from low to high).**

13 **PHONES**
Connecting headphones.

14 ◀◀ ▶▶
Fast search for a particular passage; ◀◀ backwards to the beginning of the disk and ▶▶ forwards to the end of the disk.

## TECHNICAL DATA

### General

| | |
|---|---|
| 1. Mains voltage | : 220, 240 Volt (+/– 10%) |
| 2. Mains frequency | : 50-60 Hz |
| 3. Mains voltage selection | : By soldering (220/240 Volt-version)<br>By changing transformer (110/127 Volt-version) |
| 4. Power consumption mains, operated | : 20 W |

### External RC-5 connection

Specification: V-in Low: from -2,0 V to +1,6 V
V-in High: from +3 V to +7,5 V
R-in: from 47 k to 68 k

### Line output

| | |
|---|---|
| 1. Number of channels | : 2 |
| 2. Output voltage | : 2 Vrms +/– 2 dB |
| 3. Unbalance Left-Right | : max. +/– 0,2 dB |
| 4. Output resistance | : 200 Ohm |
| 5. Nominal load impedance | : 100 kOhm // 100 pF |
| 6. Amplitude linearity | : max. +/– 0,1 dB from 20 Hz to 20 kHz into nominal load |
| 7. Phase non-linearity | : max. +/– 1,0° from 20 Hz to 20 kHz into nominal load |
| 8. Signal to noise ratio | : min 96 dB from 20 Hz to 20 kHz into nominal load |
| 9. Dynamic range | : min 90 dB from 20 Hz to 20 kHz into nominal load |
| 10. Total harmonic distortion + noise | : min -88 dB from 20 Hz to 20 kHz into nominal load |
| 11. Intermodulation distortion | : max. 0.004% (min -88 dB) from 20 Hz to 20 kHz into nominal load |
| 12. Out-band attenuation | : min 60 dB above 24,1 kHz from 20 Hz to 20 kHz into nominal load |
| 13. Channel separation | : min 93 dB from 20 Hz to 20 kHz into nominal load |
| 14. Muting during random access | : min 90 dB from 20 Hz to 20 kHz into nominal load |
| 15. Automatic switched de-emphasis with time constants | : 15/50 us |

**Headphone** (fixed)

| | |
|---|---|
| 1. Output voltage | : Max. 2 Vrms +/– 1 dB |
| 2. Unbalance Left-right | : Max. +/– 0,2 dB |
| 3. Output resistance | : 150 Ohm |
| 4. Load impedance range | : 32 Ohm to 600 Ohm |
| 5. Output power | : Max. 6 mW into 32 Ohm load<br>Max. 10 mW into 150 Ohm load<br>Max. 6 mW into 600 Ohm load |
| 8. Signal to noise ratio | : Min 93 dB from 20 Hz to 20 kHz into 600 Ohm |
| 9. Dynamic range | : Min 90 dB from 20 Hz to 20 kHz into 600 Ohm |
| 10. Total harmonic distortion + noise | : Max 0,004% (min-88 dB) from 20 Hz to 20 kHz |
| 11. Intermodulation distortion | : max 0,004% (min-88 dB) from 20 Hz to 20 kHz |
| 12. Channel separation | : min 80 dB from 20 Hz to 20 kHz into 600 Ohm |

### Dimensions and weight

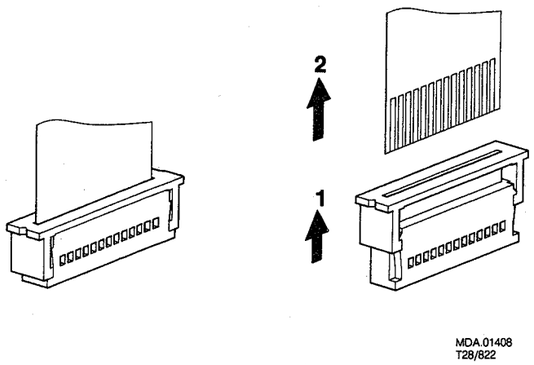
| | | |
|---|---|---|
| 1. Place and height of feet acc. to Philips specification | | |
| 2. Apparatus tray closed | WxDxM | : 420 x 280 x 100 mm |
| 3. Apparatus tray open | WxDxM | : 420 x 423 x 100 mm |
| 4. Weight | 4,0 kg | |

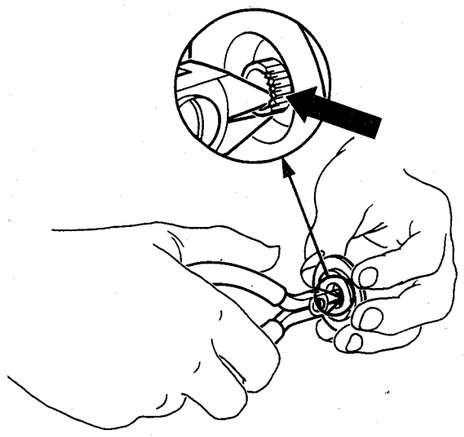
## 2. SERVICING HINTS

### Service disc hold-down

The disc should always rest properly on the turntable.
To achieve this a disc hold-down has been mounted in a bracket of the tray mechanism.
If the tray mechanism has to be disassembled for servicing, a separate disc hold-down should be used. For a service disc hold-down see the figure below.
Compose a service Disc hold-down in the following way.

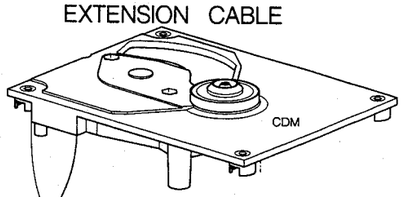
- Cut in the most inner ring of a disc holddown (4822 462 50383) with small and sharp nippers See fig. below.
- Enlarge the diameter of the innermost ring slightly with the hind part of a pencil or ballpoint, so that it jams onto the turntable with sufficient force.
- If the jamming force decreases after certain time of use, the diameter has to be enlarged with a pencil or ballpoint again.

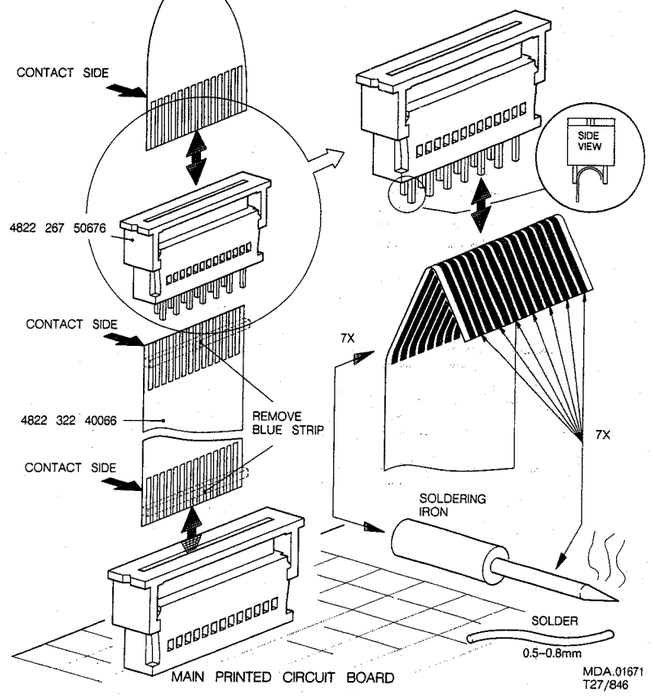


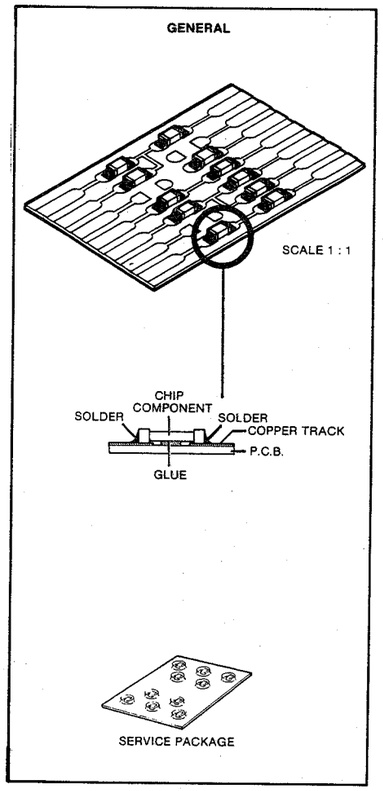



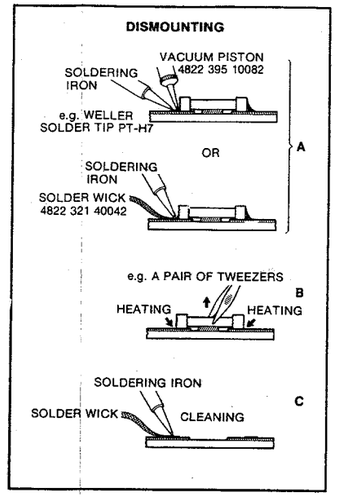

### SERVICE TOOLS

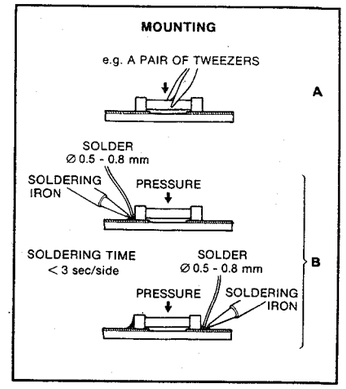
| | |
|---|---|
| Audio signals test disc | 4822 397 30184 |
| Disc without errors + disc with DO errors, black spots and fingerprints | 4822 397 30096 |
| Disc (65 min, 1kHz) without pause | 4822 397 30155 |
| Maximum diameter disc | 4822 397 60141 |
| Torx screwdrivers | |
| Set (straight) | 4822 395 50145 |
| Set (square) | 4822 395 50132 |
| 13th order filter | 4822 395 30204 |

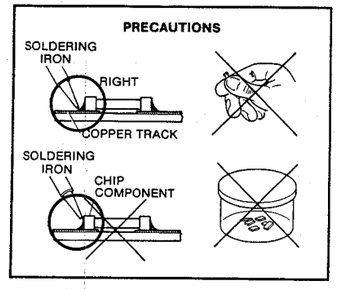


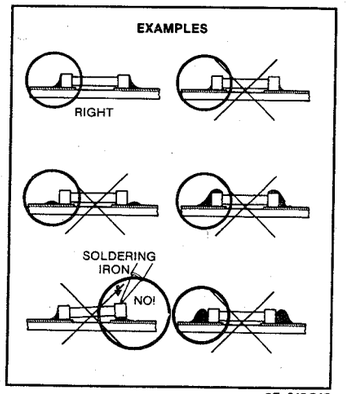

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**GB WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

**F ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**ESD**

**D WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

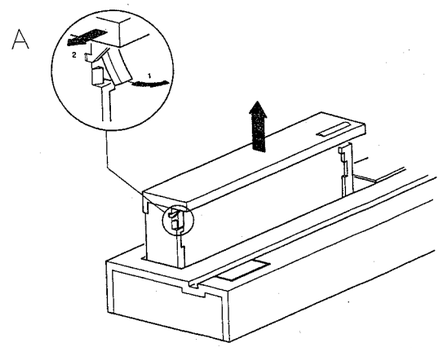
**NL WAARSCHUWING**

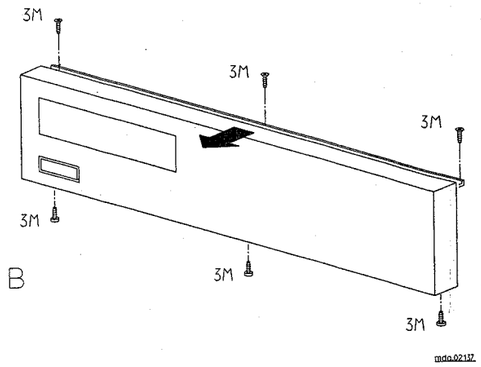
Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**I AVVERTIMENTO**

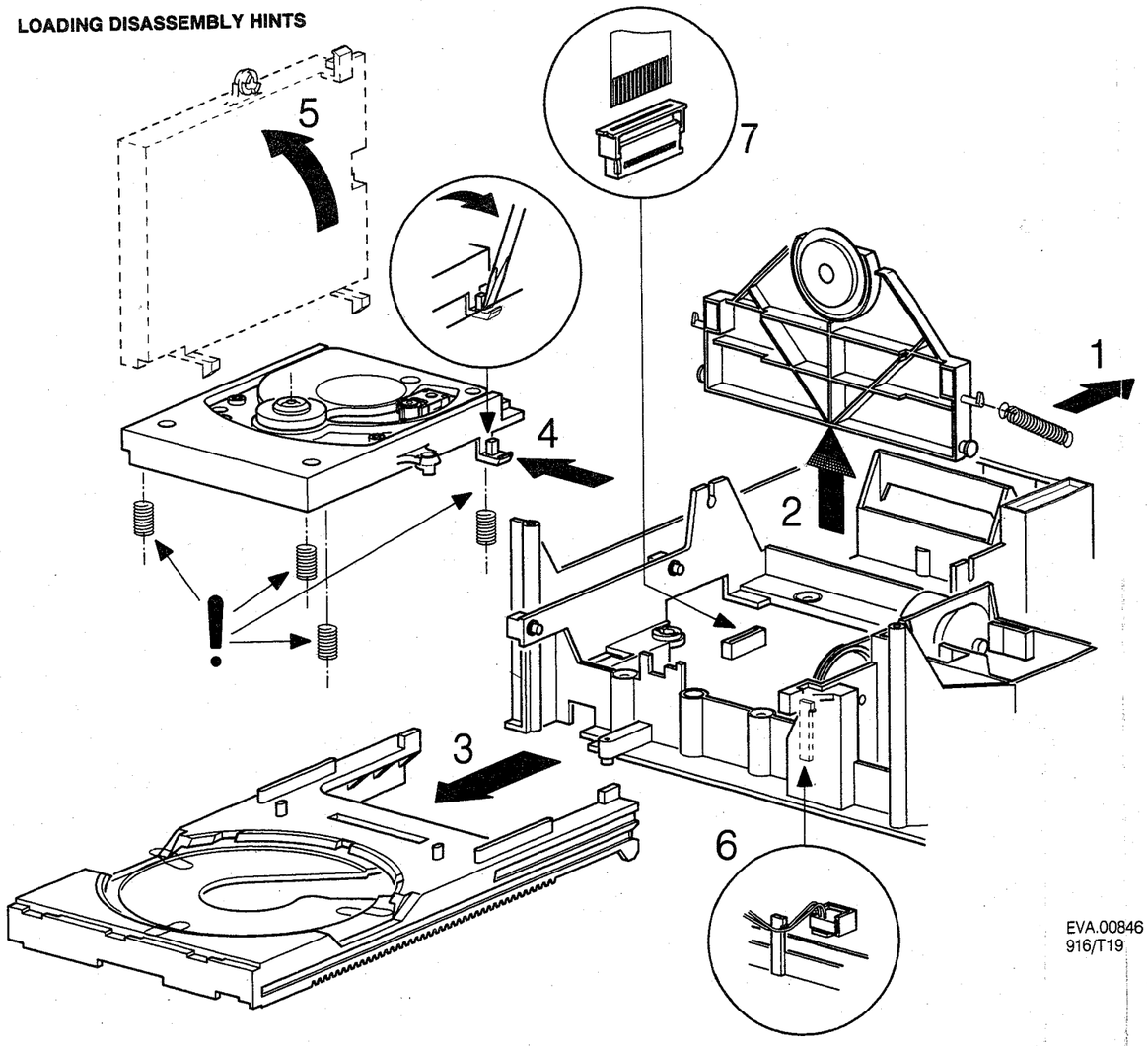
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

## 2-2
## CABINET DISASSEMBLY HINTS




## LOADING DISASSEMBLY HINTS

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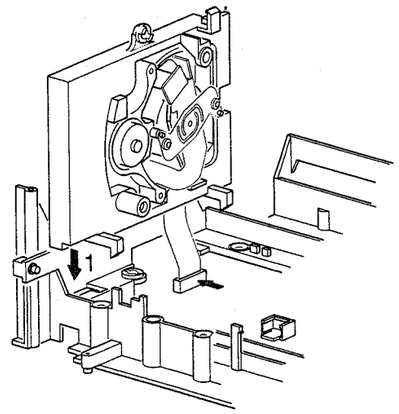
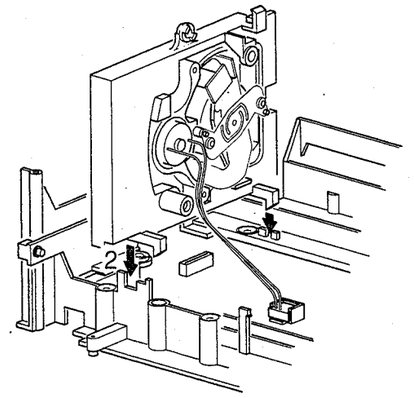
916/T19

## FOIL CONNECTION POSITION




## PREPARE SERVICE POSTITION PLAY

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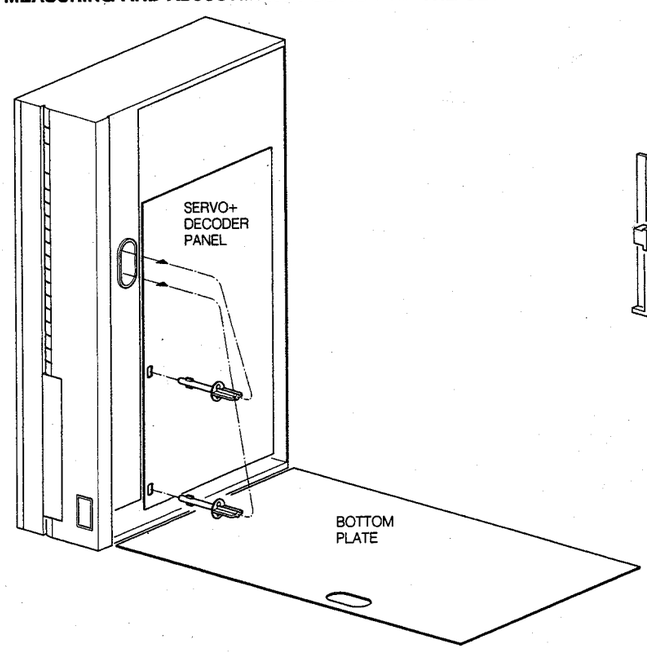
## MEASURING AND ADJUSTMENT POSTION OF THE SET

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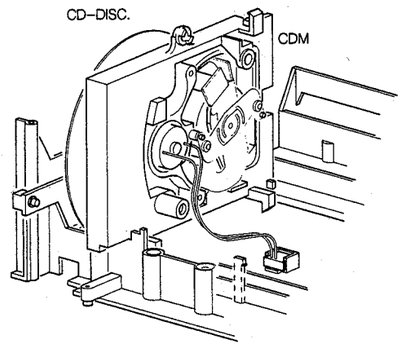
## SERVICE POSITION PLAY

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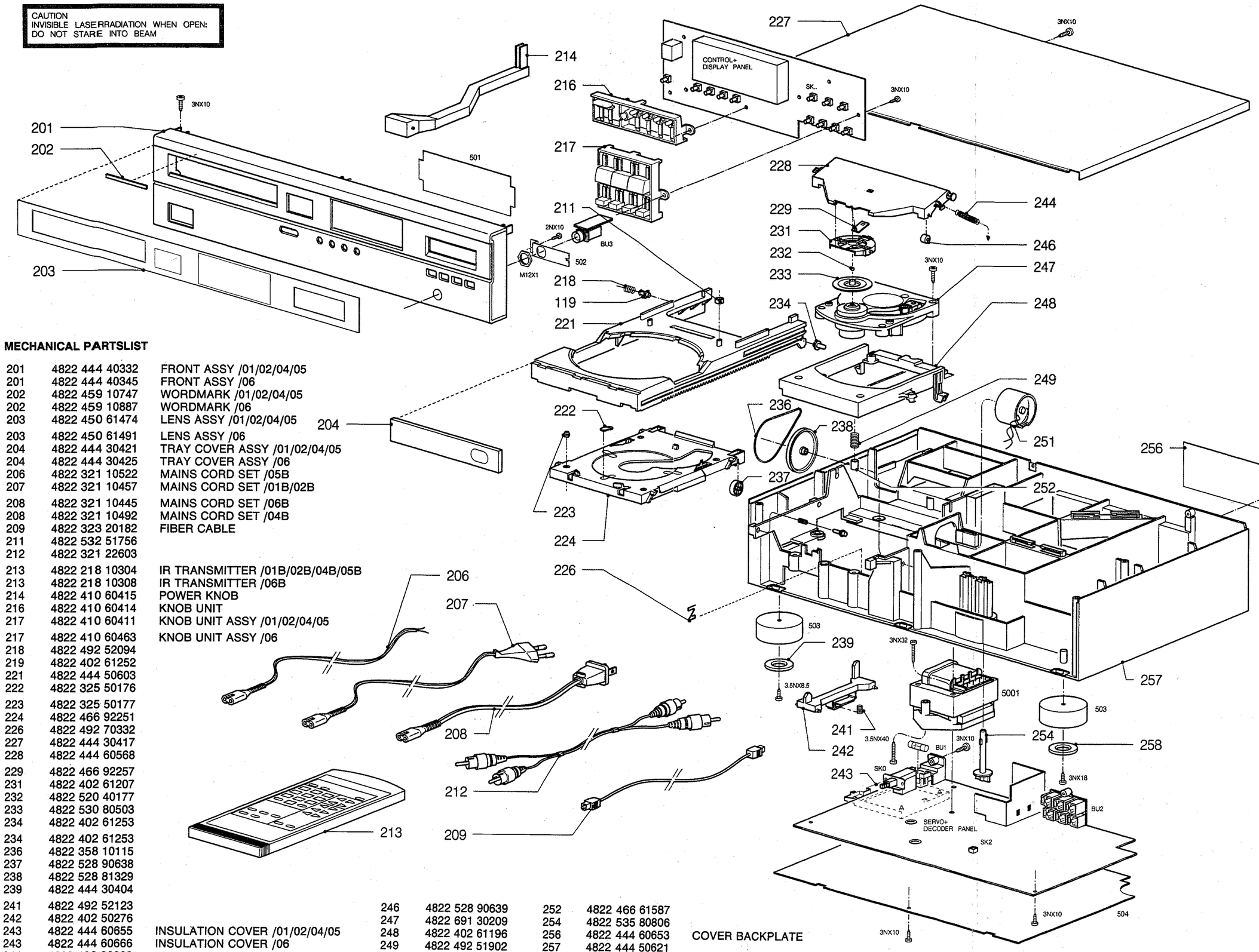
CAUTION
INVISIBLE LASER RADIATION WHEN OPEN:
DO NOT STARE INTO BEAM




**MECHANICAL PARTSLIST**

| | | |
|---|---|---|
| 201 | 4822 444 40332 | FRONT ASSY /01/02/04/05 |
| 201 | 4822 444 40345 | FRONT ASSY /06 |
| 202 | 4822 459 10747 | WORDMARK /01/02/04/05 |
| 202 | 4822 459 10887 | WORDMARK /06 |
| 203 | 4822 450 61474 | LENS ASSY /01/02/04/05 |
| 203 | 4822 450 61491 | LENS ASSY /06 |
| 204 | 4822 444 30421 | TRAY COVER ASSY /01/02/04/05 |
| 204 | 4822 444 30425 | TRAY COVER ASSY /06 |
| 206 | 4822 321 10522 | MAINS CORD SET /05B |
| 207 | 4822 321 10457 | MAINS CORD SET /01B/02B |
| 208 | 4822 321 10445 | MAINS CORD SET /06B |
| 208 | 4822 321 10492 | MAINS CORD SET /04B |
| 209 | 4822 323 20182 | FIBER CABLE |
| 211 | 4822 532 51756 | |
| 212 | 4822 321 22603 | |
| 213 | 4822 218 10304 | IR TRANSMITTER /01B/02B/04B/05B |
| 213 | 4822 218 10308 | IR TRANSMITTER /06B |
| 214 | 4822 410 60415 | POWER KNOB |
| 216 | 4822 410 60414 | KNOB UNIT |
| 217 | 4822 410 60411 | KNOB UNIT ASSY /01/02/04/05 |
| 217 | 4822 410 60463 | KNOB UNIT ASSY /06 |
| 218 | 4822 492 52094 | |
| 219 | 4822 402 61252 | |
| 221 | 4822 444 50603 | |
| 222 | 4822 325 50176 | |
| 223 | 4822 325 50177 | |
| 224 | 4822 466 92251 | |
| 226 | 4822 492 70332 | |
| 227 | 4822 444 30417 | |
| 228 | 4822 444 60568 | |
| 229 | 4822 466 92257 | |
| 231 | 4822 402 61207 | |
| 232 | 4822 520 40177 | |
| 233 | 4822 530 80503 | |
| 234 | 4822 402 61253 | |
| 234 | 4822 402 61253 | |
| 236 | 4822 358 10115 | |
| 237 | 4822 528 90638 | |
| 238 | 4822 528 81329 | |
| 239 | 4822 444 30404 | |
| 241 | 4822 492 52123 | |
| 242 | 4822 402 50276 | |
| 243 | 4822 444 60655 | INSULATION COVER /01/02/04/05 |
| 243 | 4822 444 60666 | INSULATION COVER /06 |
| 244 | 4822 492 32883 | |
| 246 | 4822 528 90639 | |
| 247 | 4822 691 30209 | |
| 248 | 4822 402 61196 | |
| 249 | 4822 492 51902 | |
| 251 | 4822 361 21258 | |
| 252 | 4822 466 61587 | |
| 254 | 4822 535 80806 | |
| 256 | 4822 444 60653 | COVER BACKPLATE |
| 257 | 4822 444 50621 | |
| 258 | 4822 444 30404 | |

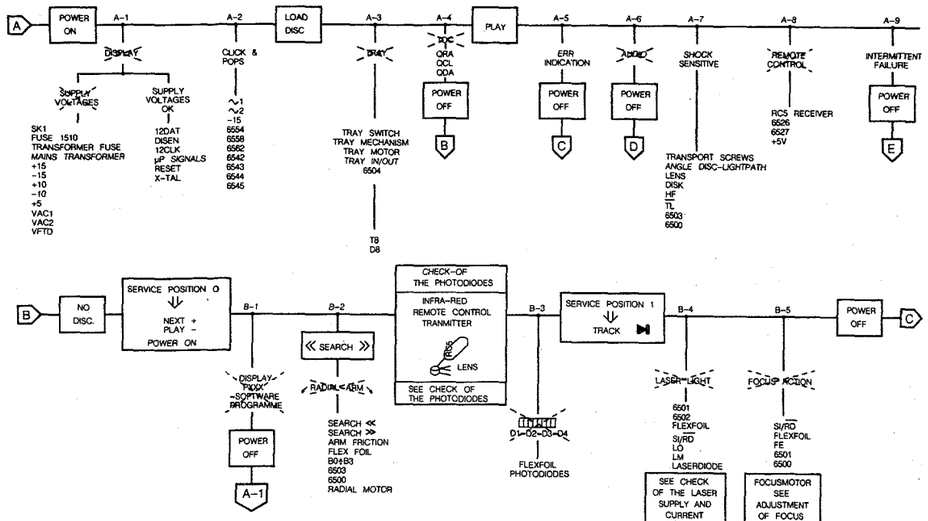
EVA.00922
T07-937

## FAULTFINDING TREE

TROUBLE SHOOTING (FAULT FINDING TREE)

Follow the path of the faultfinding tree, beginning at the top left. Perform the actions you come across in the various blocks.
Look at the various side branches to find out if the information you see there applies to your problem. If, for instance, you find the indication display , this means that no picture appears on the display.

If you establish this fault, follow the branch and perform the recommended actions. Check the signals mentioned. In a number of branches further reference is made to measurements you could carry out. These measurements are explained in several tables further on in this manual.




MDA.02201
T27/926

CS 25 257

### B-3 CHECK OF THE PHOTODIODES

| Step | Signal | Mode | ◇ | ∅ | ▭ | Δ | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | – | power on | 4<br>6<br>7<br>8 | – | – | All signals must be equal | Signal depends on Distance lens ↔<br>IR LED of remote control |

T-22387C

### B4
CHECK OF LASER SUPPLY (WITH DEMOUNTED CDM AND ADDITIONAL CIRCUIT)

| STEP | SIGNAL | MODE | ◇ | ∅ | ▭ | Δ | REMARKS |
|---|---|---|---|---|---|---|---|
| 1 | LO | SERV. POS. 2 | 9 (V) | – | 1.8<V<2.3 | – | Si-1 21, 330, GREEN LED, to LO, to LM, A, K, LITTLE LIGHT, SK, 180, to, CONNECTED DIRECTLY TO PANEL |
| | LM | SK | 11 (V) | – | 170<mV<220 | – | |
| 2 | LO | SERV. POS. 2 | 9 (V) | – | 1.8<V<2.3 | – | Si-1 21, 330, GREEN LED, to LO, to LM, A, K, LITTLE LIGHT, SK, 180, to, CONNECTED DIRECTLY TO PANEL |
| | LM | SK | 11 (V) | – | 170<mV<220 | – | |
| 3 | LO | POWER ON | 9 (V) | – | 0V ± 0.2V | – | A, K, NO LIGHT, Si-0 21 |

**During the change over from SK closed to SK open, the LED will emit more light for a short moment.**

MDA.01379
T-08 824

### B4
LASER CURRENT ADJUSTMENT

| STEP | SIGNAL | MODE | ◇ | ∅ | ▭ | Δ | REMARKS |
|---|---|---|---|---|---|---|---|
| 1 | – | POWER OFF | 11 (a) GND | R3520 | 1k | – | PRE-ADJUSTMENT OHMIC VALUE |
| 2 | EYE-PATTERN HF | TEST DISC 5 PLAY | PIN 32 DECODER A (SAA7310) (Δ) 0V GND | – | – | SEE DRAWING 3701788 | IF NO SIGNAL SEE: "START UP PROCEDURE" |
| 3 | LASER CURRENT ≙ VOLTAGE ACROSS R3501 | TEST DISC 5 PLAY TRACK 1 | 1 (V) 2 | R3520 | 50mV DC | – | HIGH-OHMIC MEASUREMENT |

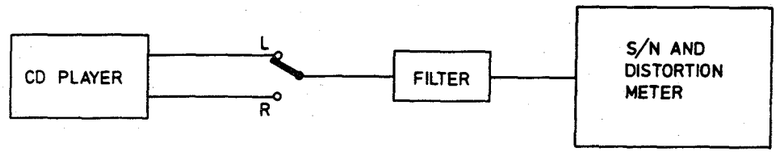
MDA.01778
T28/901

### B5
ADJUSTMENT OF FOCUS-OFFSET

| STEP | SIGNAL | MODE | ◇ | ∅ | ▭ | Δ | REMARKS |
|---|---|---|---|---|---|---|---|
| 1 | – | POWER ON | – | R3569 | – | – | ADJUST FOR OPTICAL MID-POSITION |
| 2 | FE LAG | PLAY TEST DISC 5 TRACK 1 | 27 | R3569 | 400mV ±40mV DC | – | FINE ADJUSTMENT |

MDA.01381
T-08 824

## SPECIFICATION MEASUREMENT




e.g. SOUND TECHNOLOGY ST 1700B

30 459 A12

## SPECIFICATIONS MEASUREMENT

| Signal | Mode | ◇ | | | Remarks |
|---|---|---|---|---|---|
| BU2-L | Test disc 3, play total harmonic distorsion | filter output | See spec. | | See drawing 30459A12 |
| BU2-R | Test disc 3, play total harmonic distorsion | filter output | See spec. | | See drawing 30459A12 |
| BU2-L | Test disc 3, play signal-to-noise ratio | filter output | See spec. | | See drawing 30459A12 |
| BU2-R | Test disc 3, play signal-to-noise ratio | filter output | See spec. | | See drawing 30459A12 |

T-22255O

## ERROR TABLE

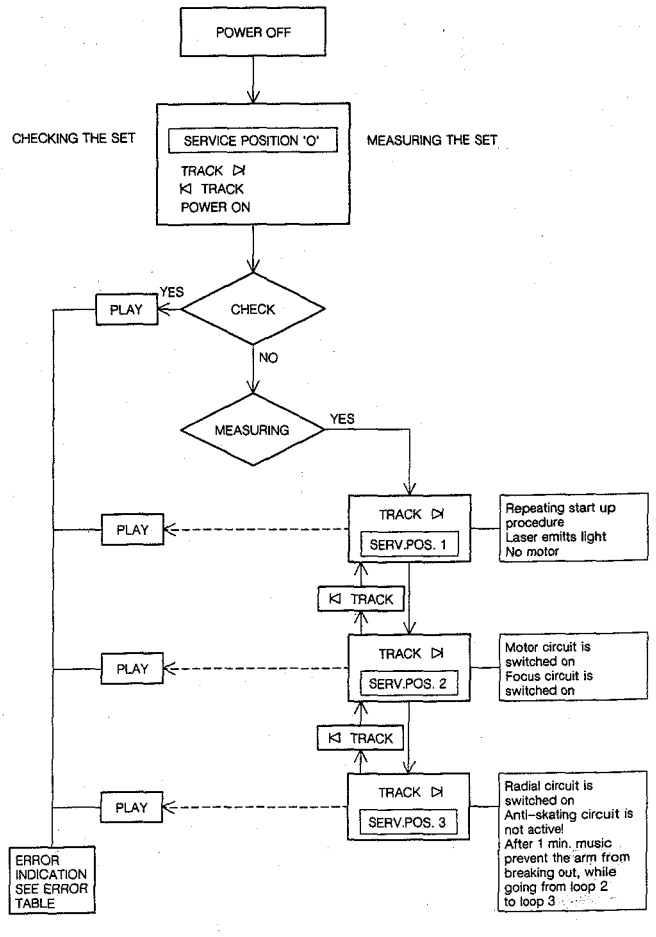
### System errors

| Indication | Cause | Check |
|---|---|---|
| Er 02 | No $\overline{TL}$ pulse at start-up. | $\overline{Si}$, Sc, RD, Photodiode signal processor $\overline{TL}$, HFI, CD disc present? |
| Er 03 | No Lead-in track found | CD disc, radial arm position, REdig, Radial error processor |
| Er 05 | $\overline{TL}$ pulse low > 50ms during PLAY | CD disc, HFI |
| Er 06 | No $\overline{TL}$ pulse with 0.5 sec. during track jumping | RE-lag circuit, $\overline{TL}$, REdig |
| Er 07 | Subcode error during PLAY | HFI |
| Er 08 | TOC error | CD disc, turntable motor control, radial arm position |

### Operating errors

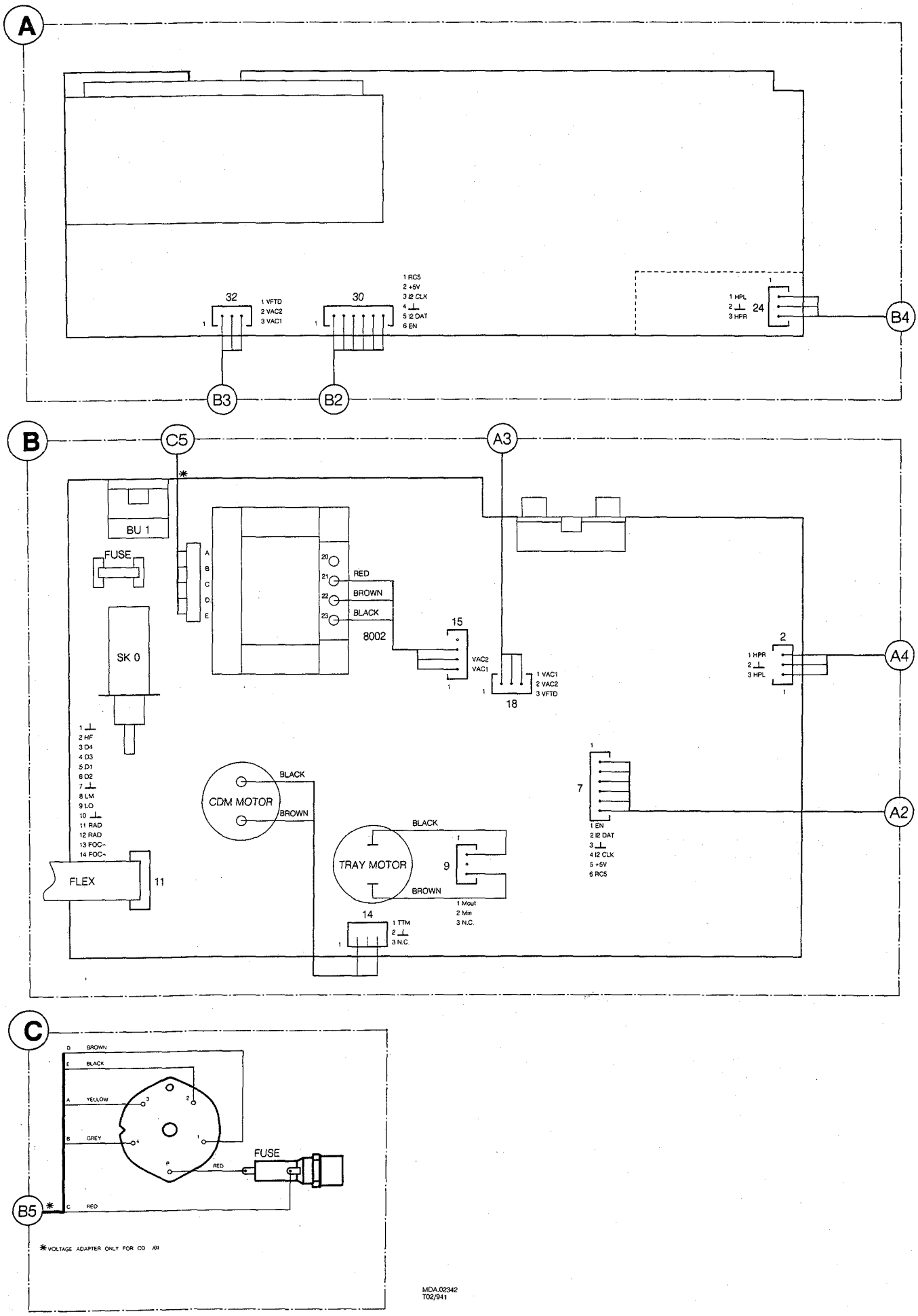
**Er 30:** NEXT when repeat is off.
**Er 31:** PREVIOUS when repeat is off.
**Er 32:** INDEX selected when no track selected.
**Er 33:** Selected index does not exist on this CD.
**Er 34:** Review error: no program.
**Er 35:** Program memory full.
**Er 36:** Programmed track is non existing on this CD.
**Er 37:** Selected track is non existing on this CD.
**Er 60:** Fast forward bound.
**Er 61:** Fast reverse bound.

SERVICE LOOP



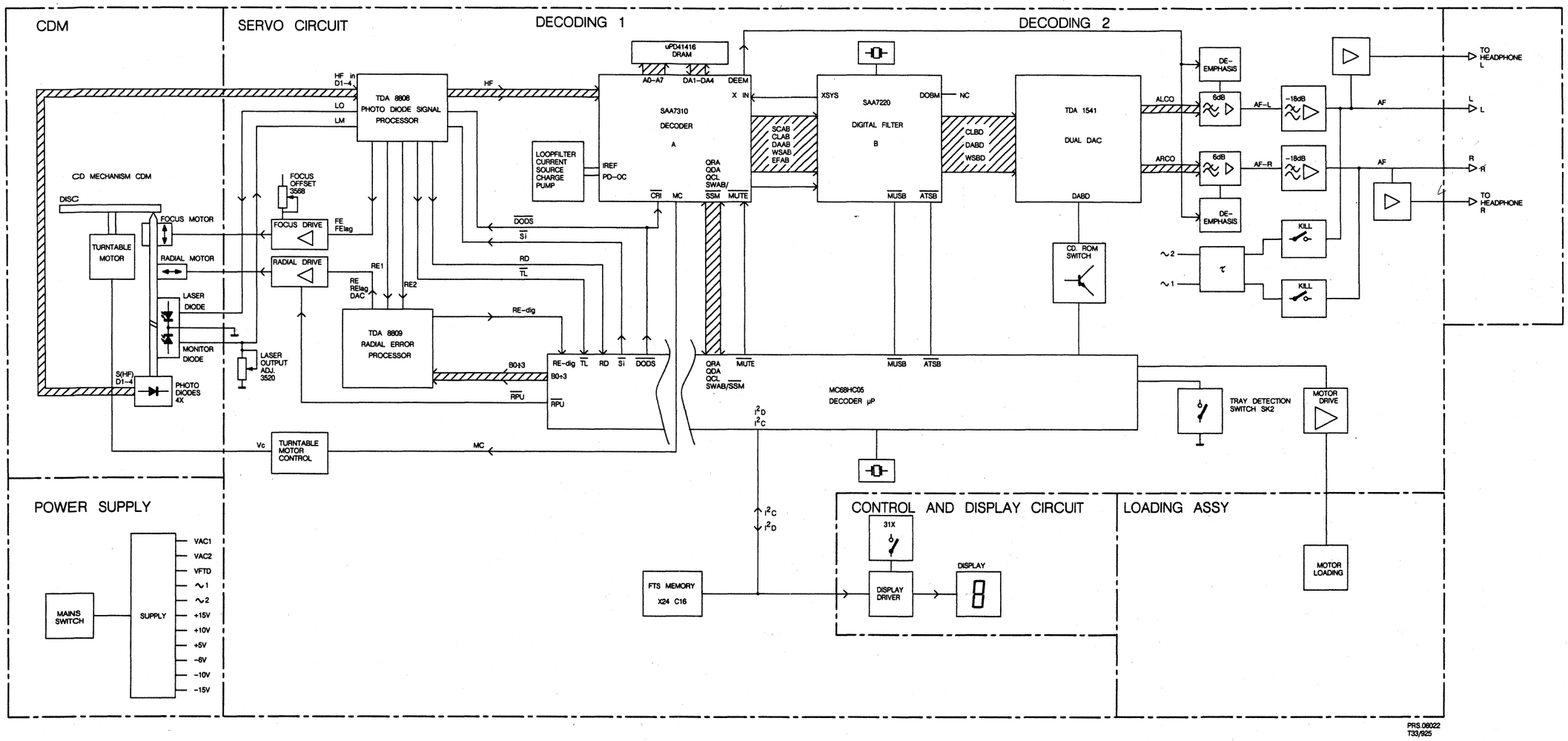

MDA.02157
T27/918

## WIRING DIAGRAM




MDA.02342
T02/941

**BLOCK DIAGRAM**



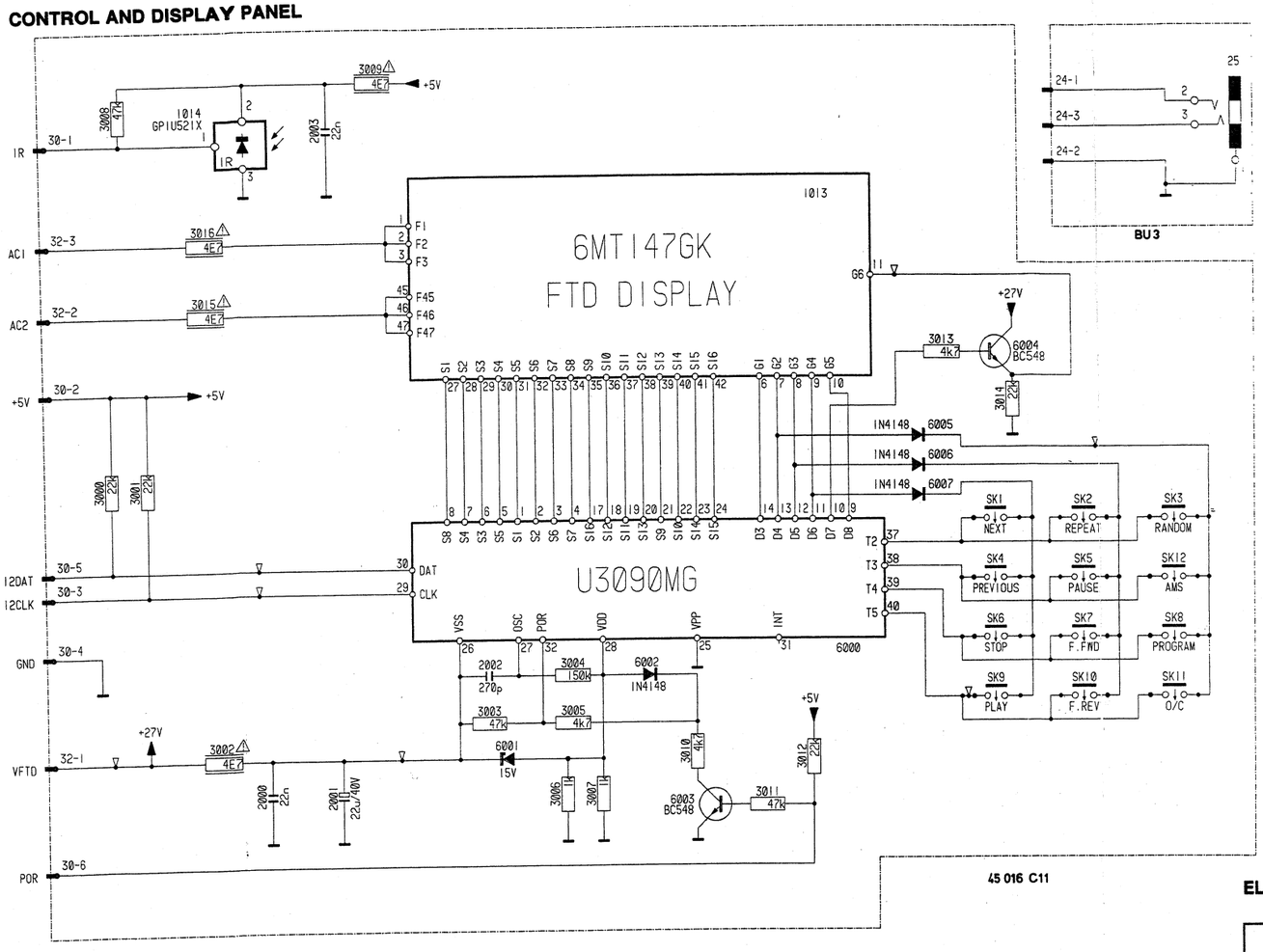

AGC – Automatic Gain Control
B0-B3 – Control bits for radial circuit
BEQ – Equalizer reference current input
BGC – DC and LF gain control reference input
Cosc1 – Capacitor wobble oscillator
Cosc2 – Capacitor wobble oscillator
DEC – Decoupling input internal bypass
DET – HF detector voltage input
$\overline{DIV4}$ – Divide by 4 input
$\overline{DODS}$ – Drop out detector suppression
D1+4 – Photodiode currents
FE – Focus error signal
FE lag – Focus error signal for LAG network
HF – HF output for DEMOD
HFD – HF detector output for DEMOD
HF-in – HF current input to HF amplifier
HF-out – HF amplifier and equalizer voltage output
LM – Laser monitor diode input
LO – Laser amplifier current output
MC – Motor control signal
offset IN – Offset control input
offset OUT – Offset control output
PLLH – PLL on hold output
RADout – output of RE2-RE1 input
RE – Radial error signal (Amplified $RE_2$-$RE_1$ currents)

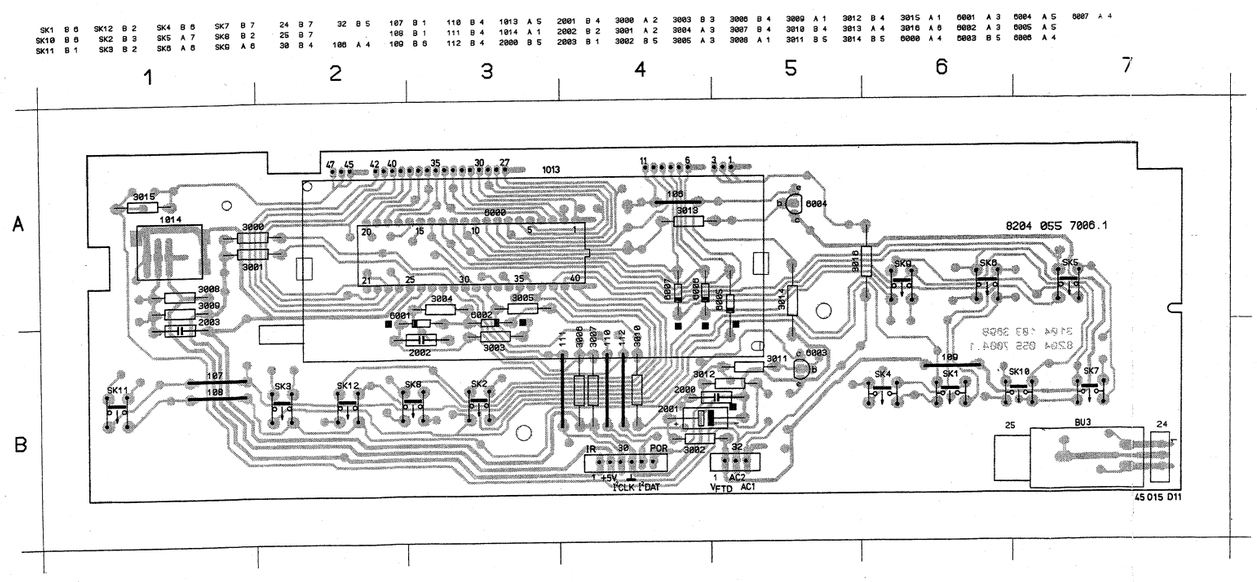
Rosc – Resistor wobble oscillator
Rwob – Wobble generator input
RE1 – Radial error signal 1 (summation of amplified currents $D_3$ and $D_4$
RE2 – Radial error signal 2 (summation of amplified currents $D_1$ and $D_2$
RE dig – Radial error digital
RE lag – Radial error signal for LAG network
Sc – Starting up capacitor input
$\overline{Si}$/RD – On/off control for laser supply and focus circuit. Ready signal, Starting up procedure succesful.
$\overline{TL}$ – Track loss output signal
TTM– – Control voltage for turntable motor
TTM+ – Control voltage for turntable motor
Vext– – Supply connection
Vext+ – Supply connection

$\overline{ATSB}$ – Attenuation of Audio level in Search position (Cueing)
CD ROM Switch – Digital Data information on disc signal
CEFM – Clock Eight-to-Fourteen Modulator
CLAB – Clock signal Decoder-A to Filter-B
CLBD – Clock signal Filter-B to DAC
$\overline{CREF}$ – Reference Current
$\overline{CRI}$ – Counter Reset Inhibit
DAAB – Data signal Decoder-A to Filter-B
$\overline{DABD}$ – Data signal Filter-B to DAC
$\overline{DEEM}$ – Deemphasis
DOBM – Digital out signal
$\overline{EFAB}$ – Error flag Decoder-A to Filter-B
$\overline{MUTE}$ – Mute signal

$\overline{MUSB}$ – Soft Mute signal
PD/OC – Phase detector - oscillator control
QCL – Q-channel Clock signal
QDA – Q-channel Data signal
QRA – Q-channel Request Aknowledge
SCAB – Subcode clock Decoder-A to Filter-B
SDAB – Subcode data Decoder-A to Filter-B
SWAB/$\overline{SSM}$ – Subcode Word/Start-stop motor, signal
WSAB – Word select Decoder-A to Filter-B
WSBD – Word Select Filter-B to DAC
XIN – Oscillator signal in Decoder-A
XSYS – Oscillator signal out Filter-B
BSW – Bandwidth switch turntable motor circuit

## CONTROL AND DISPLAY PANEL




## ELECTRICAL PARTSLIST CONTROL & DISPLAY PANEL

| | | |
|---|---|---|
| 2501 | 5322 124 21643 | 22µF 20% 40V |
| 2502 | 4822 122 10166 | 22µF 30% 16V |
| 2503 | 4822 122 10172 | 220pF 10% 50V |
| 2504 | 5322 124 21643 | 22µF 20% 40V |

| | | |
|---|---|---|
| 3501 | 4822 116 52463 | 22k 5% 0,5W |
| 3502 | 4822 116 52463 | 22k 5% 0,5W |
| 3503 | 4822 116 52463 | 22k 5% 0,5W |
| 3504 | 4822 111 30499 | 4,7Ω 5% 0,33W |
| 3505 | 4822 116 52426 | 4k7 5% 0,5W |
| 3506 | 4822 116 52426 | 4k7 5% 0,5W |
| 3507 | 4822 116 52472 | 47k 5% 0,5W |
| 3508 | 4822 116 52426 | 4k7 5% 0,5W |
| 3509 | 4822 116 52501 | 150k 5% 0,5W |
| 3510 | 4822 116 52391 | 1k 5% 0,5W |
| 3511 | 4822 116 52391 | 1k 5% 0,5W |
| 3512 | 4822 111 30593 | 3,3Ω 5% 0,33W |
| 3513 | 4822 111 30593 | 3,3Ω 5% 0,33W |
| 3515 | 4822 111 30499 | 4,7Ω 5% 0,33W |
| 3516 | 4822 116 52472 | 47k 5% 0,5W |

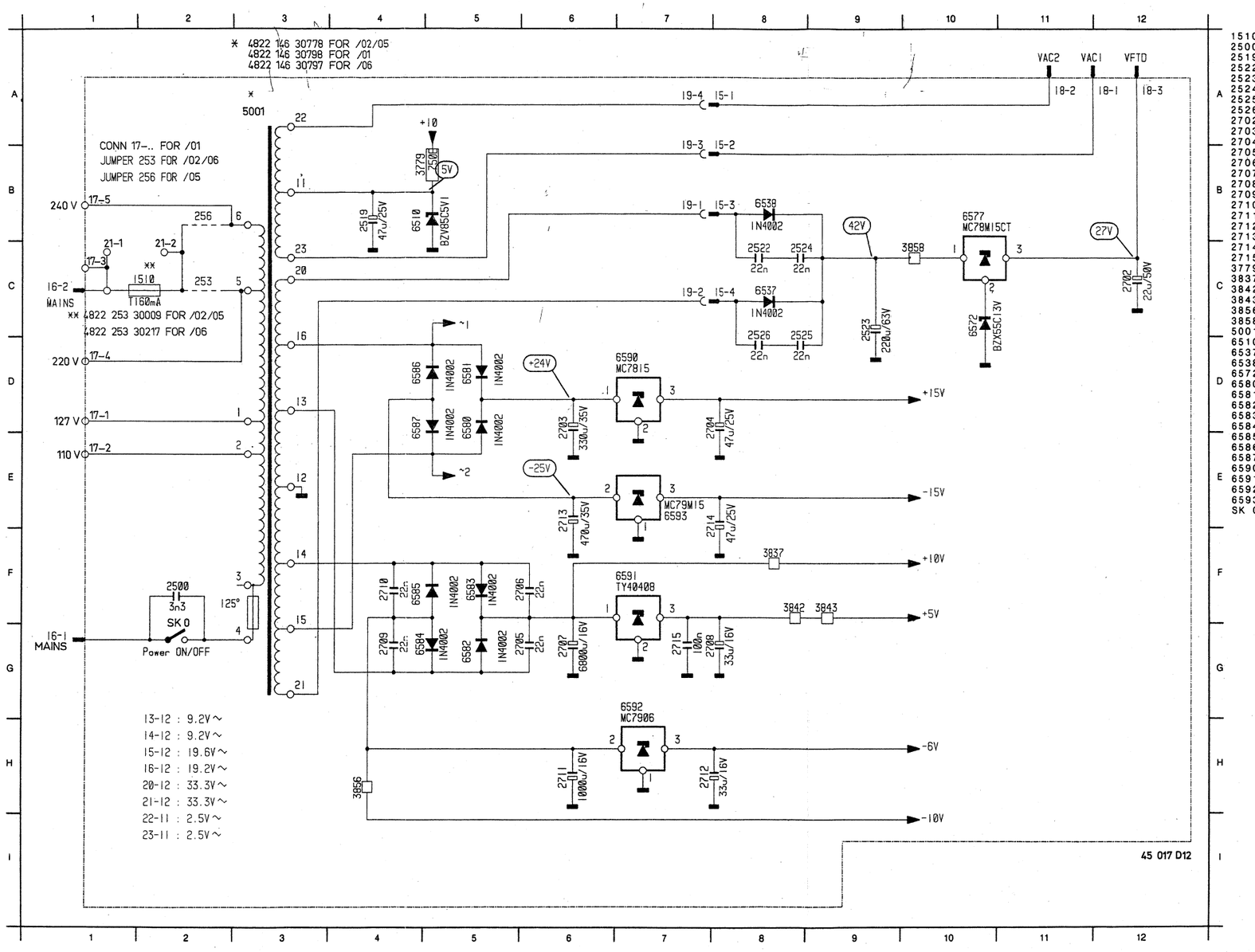
| | | |
|---|---|---|
| 6501 | 4822 209 72226 | U3090MG |
| 6502 | 4822 130 81086 | BZX55-C15 |
| 6503 | 4822 130 30621 | 1N4148 |
| 6504 | 4822 130 40938 | BC548 |
| 6506 | 4822 130 30621 | 1N4148 |
| 6507 | 4822 130 30621 | 1N4148 |
| 6508 | 4822 130 30621 | 1N4148 |
| 6511 | 4822 130 30621 | 1N4148 |

| | | |
|---|---|---|
| SK . . | 4822 276 12276 | Tact switch (4.3 mm) |

**Miscellaneous**

| | | |
|---|---|---|
| BU3 | 4822 267 30743 | Phone socket |
| 1502 | 4822 214 51772 | RC receiver |
| 1504 | 4822 130 90661 | Display |

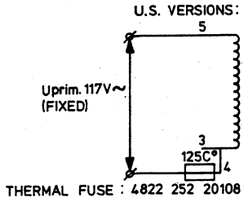
# POWER SUPPLY CIRCUIT DIAGRAM




1510 C 2
2500 F 2
2519 B 4
2522 C 8
2523 C 9
2524 C 8
2525 C 8
2526 C 8
2702 C12
2703 D 6
2704 D 7
2705 G 6
2706 F 6
2707 G 6
2708 G 8
2709 G 4
2710 F 4
2711 H 6
2712 H 7
2713 E 6
2714 E 8
2715 G 7
3779 B 5
3837 F 8
3842 F 8
3843 F 9
3856 H 4
3858 C10
5001 A 3
6510 B 4
6537 C 8
6538 B 8
6572 C10
6580 D 5
6581 D 5
6582 G 5
6583 F 5
6584 G 4
6585 F 4
6586 D 4
6587 D 4
6590 D 7
6591 F 7
6592 G 7
6593 E 7
SK 0 F 2

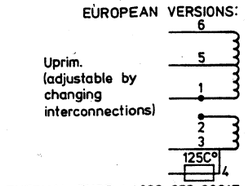
PRS.04301

U.S. VERSIONS:

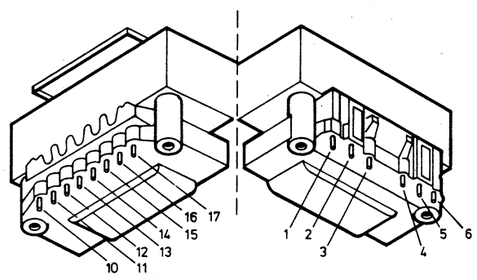



THERMAL FUSE : 4822 252 20108

EUROPEAN VERSIONS:




THERMAL FUSE : 4822 252 20017

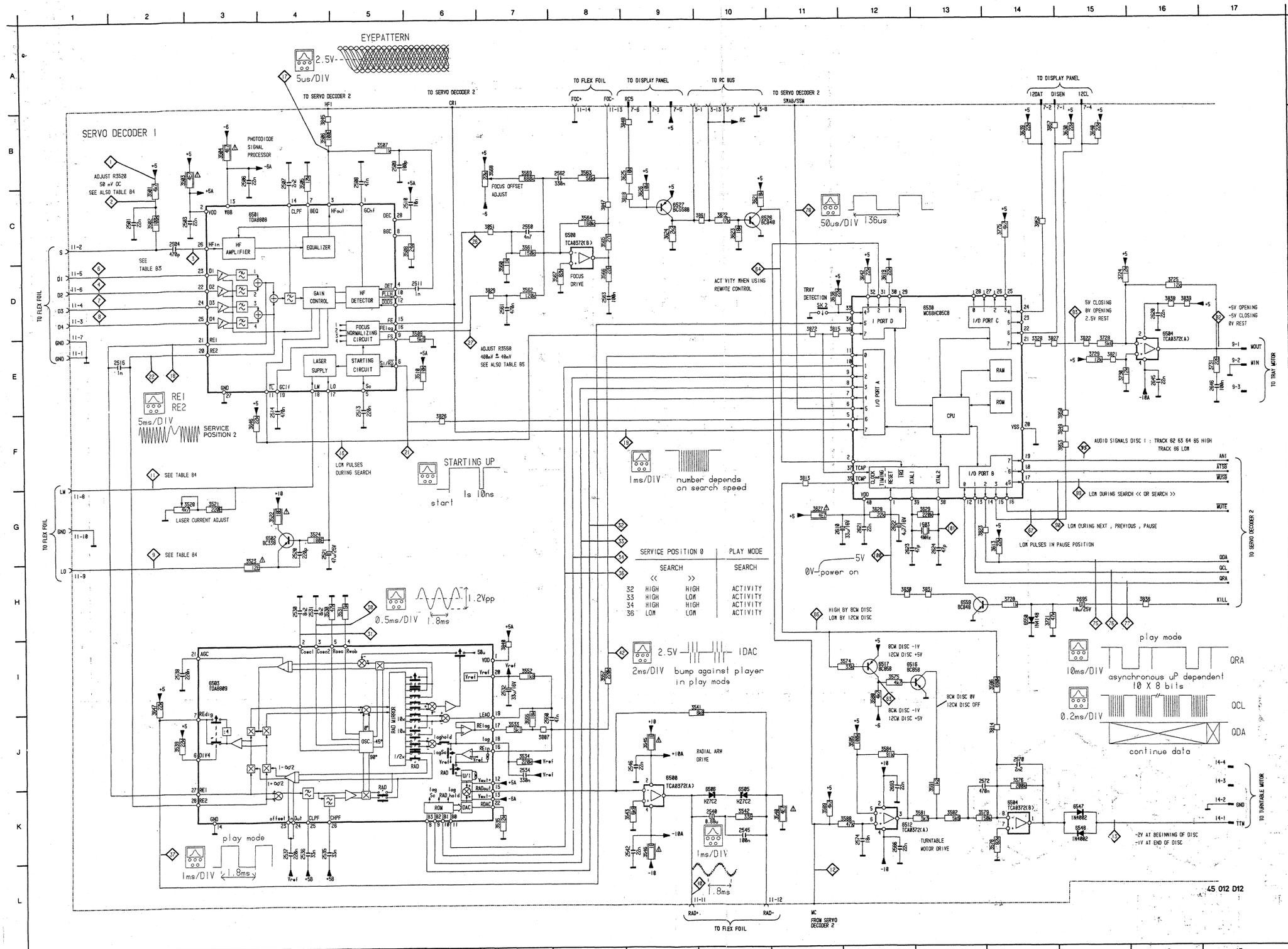



44 577 A11

| Uprim. (V) ~ | Winding | Inter-connect |
|---|---|---|
| 110 | 4-1 | 3-1/5-2 |
| 127 | 4-6 | 3-1/5-2 |
| 220 | 4-5 | 1-2 |
| 240 | 4-6 | 1-2 |

4-5

## SERVO DECODER 1 CIRCUIT DIAGRAM




| | | | | | |
|---|---|---|---|---|---|
| | 1503 | G13 | 3721 | H14 |
| | 2501 | C 2 | 3724 | D15 |
| | 2503 | C 3 | 3725 | D16 |
| | 2504 | C 2 | 3728 | E15 |
| | 2506 | B 3 | 3729 | E15 |
| | 2507 | B 4 | 3730 | E15 |
| A | 2508 | B 5 | 3731 | E17 |
| | 2509 | B 5 | 3775 | C14 |
| | 2510 | C 6 | 3807 | J 7 |
| | 2511 | D 6 | 3813 | F11 |
| | 2513 | E 5 | 3814 | J14 |
| | 2514 | E 4 | 3815 | D11 |
| | 2515 | E 2 | 3818 | C 9 |
| | 2520 | G 4 | 3821 | E15 |
| | 2521 | G 4 | 3822 | E15 |
| | 2530 | H 4 | 3823 | G14 |
| B | 2531 | H 4 | 3826 | F 6 |
| | 2532 | I 7 | 3827 | E14 |
| | 2534 | J 7 | 3829 | D 7 |
| | 2535 | K 4 | 3830 | H12 |
| | 2536 | K 4 | 3831 | H13 |
| | 2537 | K 4 | 3836 | H16 |
| | 2538 | I 2 | 3838 | D16 |
| | 2540 | K10 | 3839 | D16 |
| | 2545 | K10 | 3840 | I 7 |
| C | 2546 | J 9 | 3845 | B 4 |
| | 2550 | J 8 | 3847 | C 8 |
| | 2560 | C 7 | 3848 | B 9 |
| | 2561 | D 7 | 3849 | F15 |
| | 2562 | B 8 | 3850 | F15 |
| | 2563 | D 8 | 3851 | C 7 |
| | 2566 | K12 | 3852 | C14 |
| | 2570 | J14 | 3853 | F15 |
| | 2572 | J14 | 3857 | B14 |
| | 2574 | K12 | 3861 | C10 |
| D | 2610 | G11 | 3872 | D11 |
| | 2620 | D16 | 6500 | C 8 |
| | 2621 | G12 | 6500 | J 9 |
| | 2622 | G12 | 6501 | C 3 |
| | 2623 | G12 | 6502 | G 4 |
| | 2624 | G13 | 6503 | I 3 |
| | 2645 | E16 | 6504 | E16 |
| | 2646 | E17 | 6504 | K14 |
| | 2693 | K12 | 6505 | K10 |
| E | 2695 | H15 | 6506 | K10 |
| | 3328 | E14 | 6512 | K12 |
| | 3501 | C 2 | 6516 | I 13 |
| | 3502 | C 2 | 6517 | I 12 |
| | 3503 | B 3 | 6526 | C11 |
| | 3504 | B 3 | 6527 | C 9 |
| | 3505 | B 4 | 6530 | D13 |
| | 3506 | B 4 | 6547 | K15 |
| | 3507 | B 5 | 6548 | K15 |
| | 3508 | C 6 | 6550 | H14 |
| F | 3509 | D 6 | 6559 | H13 |
| | 3510 | E 6 | SK 2 | D11 |
| | 3520 | G 3 | | |
| | 3521 | G 3 | | |
| | 3522 | G 4 | | |
| | 3523 | G 3 | | |
| | 3524 | G 4 | | |
| | 3530 | H 4 | | |
| | 3531 | H 5 | | |
| | 3533 | J 7 | | |
| G | 3534 | J 7 | | |
| | 3535 | K 7 | | |
| | 3539 | J 2 | | |
| | 3540 | K11 | | |
| | 3541 | I 10 | | |
| | 3542 | K 9 | | |
| | 3542 | K10 | | |
| | 3543 | K 9 | | |
| | 3545 | J 9 | | |
| | 3546 | K 9 | | |
| H | 3552 | I 7 | | |
| | 3555 | J 7 | | |
| | 3557 | I 8 | | |
| | 3560 | D 7 | | |
| | 3561 | C 7 | | |
| | 3562 | D 7 | | |
| | 3563 | B 8 | | |
| | 3564 | C 8 | | |
| | 3565 | C 8 | | |
| I | 3566 | D 8 | | |
| | 3567 | D 8 | | |
| | 3568 | B 7 | | |
| | 3569 | B 7 | | |
| | 3574 | I 12 | | |
| | 3575 | I 12 | | |
| | 3576 | J14 | | |
| | 3578 | K14 | | |
| | 3579 | K13 | | |
| | 3580 | I 12 | | |
| J | 3581 | K13 | | |
| | 3582 | K13 | | |
| | 3584 | J12 | | |
| | 3585 | J12 | | |
| | 3586 | I 14 | | |
| | 3588 | K12 | | |
| | 3589 | K11 | | |
| | 3591 | K13 | | |
| | 3613 | G14 | | |
| | 3619 | D12 | | |
| K | 3621 | C10 | | |
| | 3622 | C10 | | |
| | 3623 | C10 | | |
| | 3624 | C 9 | | |
| | 3625 | B 9 | | |
| | 3626 | C 9 | | |
| | 3627 | G11 | | |
| | 3628 | G12 | | |
| | 3629 | G13 | | |
| | 3630 | B15 | | |
| L | 3638 | D11 | | |
| | 3639 | B14 | | |
| | 3640 | B15 | | |
| | 3642 | D12 | | |
| | 3646 | F 3 | | |
| | 3647 | I 2 | | |
| | 3720 | H14 | | |

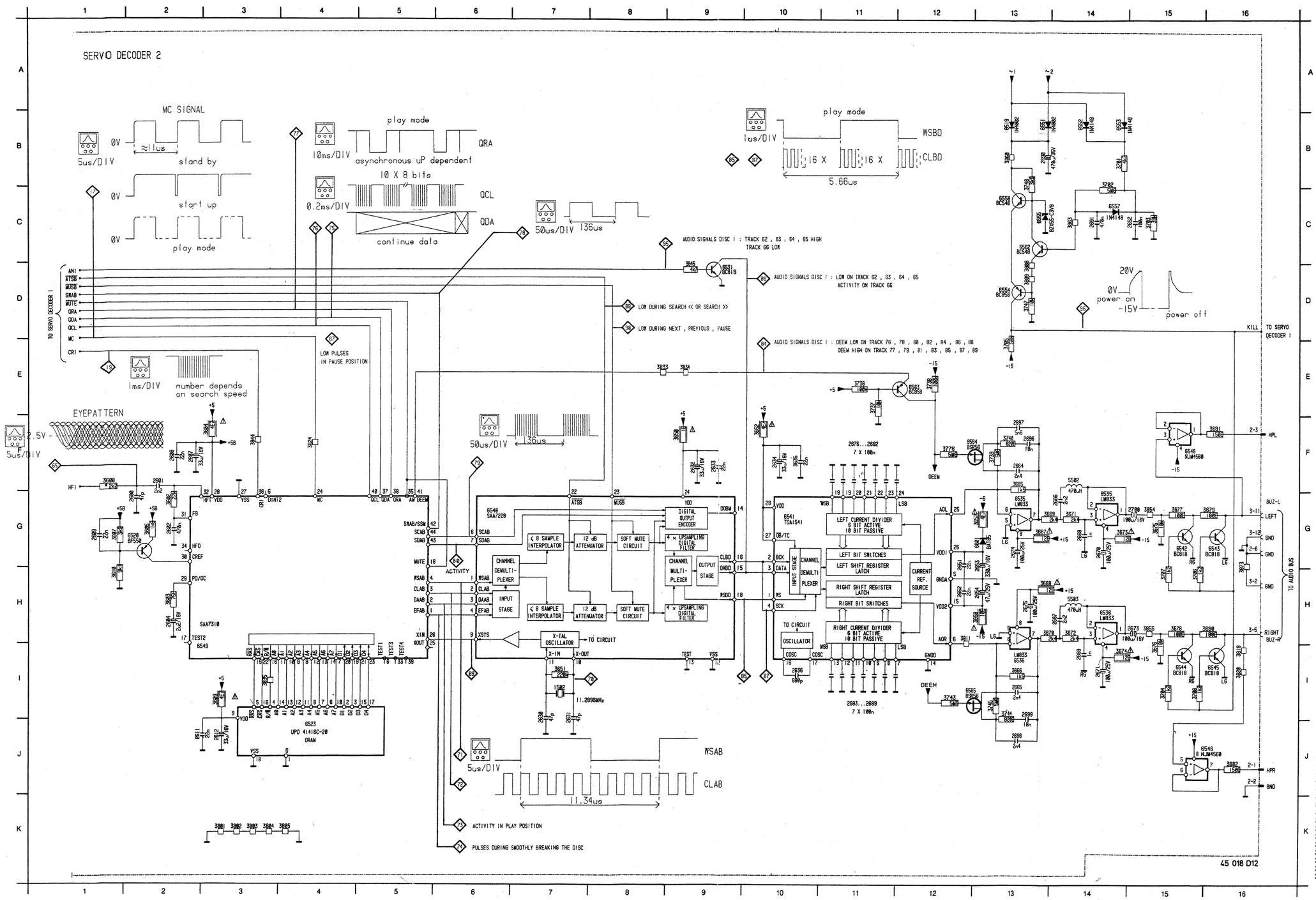
## SERVO DECODER PANEL COMPONENT SIDE

| | | |

## SERVO DECODER PANEL SOLDER SIDE

| | | |

## SERVO DECODER 2 CIRCUIT DIAGRAM




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1502 | I 7 | 3802 | K 3 | | | |
| | 2600 | G 2 | 3803 | K 3 | | | |
| | 2601 | F 2 | 3804 | K 3 | | | |
| | 2602 | G 2 | 3805 | K 4 | | | |
| | 2604 | H 2 | 3808 | C13 | | | |
| | 2607 | F 2 | 3809 | D13 | | | |
| A | 2608 | F 2 | 3811 | H12 | | | |
| | 2609 | G 1 | 3819 | H16 | | | |
| | 2611 | J 3 | 3820 | I 16 | | | |
| | 2612 | J 3 | 3824 | F 4 | | | |
| | 2630 | I 7 | 3833 | E 9 | | | |
| | 2631 | I 7 | 3834 | E 9 | | | |
| | 2632 | F 9 | 3835 | I 3 | | | |
| | 2633 | F 9 | 3844 | F 3 | | | |
| | 2634 | F10 | 3854 | G15 | | | |
| B | 2636 | I 10 | 3855 | H15 | | | |
| | 2651 | G12 | 3860 | B13 | | | |
| | 2652 | H12 | 3863 | C14 | | | |
| | 2653 | G13 | 3873 | G16 | | | |
| | 2654 | H13 | 5502 | F14 | | | |
| | 2664 | F13 | 5503 | H14 | | | |
| | 2665 | I 13 | 6519 | B13 | | | |
| | 2666 | G14 | 6520 | G 2 | | | |
| | 2667 | H14 | 6523 | J 4 | | | |
| C | 2668 | G14 | 6531 | C 9 | | | |
| | 2669 | I 14 | 6535 | G13 | | | |
| | 2670 | G14 | 6535 | F14 | | | |
| | 2671 | I 14 | 6536 | H14 | | | |
| | 2673 | H15 | 6536 | I 13 | | | |
| | 2674 | G13 | 6540 | G 6 | | | |
| | 2675 | H13 | 6541 | G10 | | | |
| | 2676 | F11 | 6542 | G15 | | | |
| | 2677 | F11 | 6543 | G16 | | | |
| | 2678 | F11 | 6544 | I 15 | | | |
| D | 2679 | F11 | 6545 | I 16 | | | |
| | 2680 | F11 | 6546 | F15 | | | |
| | 2681 | F11 | 6546 | J16 | | | |
| | 2682 | F12 | 6549 | I 3 | | | |
| | 2683 | I 11 | 6551 | B13 | | | |
| | 2684 | I 11 | 6552 | B14 | | | |
| | 2685 | I 11 | 6553 | B14 | | | |
| | 2686 | I 11 | 6554 | D13 | | | |
| | 2687 | I 11 | 6555 | C13 | | | |
| E | 2688 | I 11 | 6557 | C14 | | | |
| | 2689 | I 12 | 6558 | C13 | | | |
| | 2690 | B13 | 6562 | C13 | | | |
| | 2691 | C14 | 6563 | E12 | | | |
| | 2692 | C15 | 6564 | F13 | | | |
| | 2696 | F13 | 6565 | I 13 | | | |
| | 2697 | F13 | 6601 | G13 | | | |
| | 2698 | J13 | | | | | |
| | 2699 | I 13 | | | | | |
| F | 2700 | G15 | | | | | |
| | 3600 | F 1 | | | | | |
| | 3602 | G 2 | | | | | |
| | 3603 | H 2 | | | | | |
| | 3604 | F 3 | | | | | |
| | 3605 | G 2 | | | | | |
| | 3607 | G 2 | | | | | |
| | 3609 | I 3 | | | | | |
| | 3610 | H 2 | | | | | |
| G | 3635 | F10 | | | | | |
| | 3645 | C 9 | | | | | |
| | 3650 | F 9 | | | | | |
| | 3651 | I 7 | | | | | |
| | 3652 | F10 | | | | | |
| | 3657 | G13 | | | | | |
| | 3658 | H13 | | | | | |
| | 3665 | F13 | | | | | |
| | 3666 | I 13 | | | | | |
| | 3667 | G13 | | | | | |
| H | 3668 | H13 | | | | | |
| | 3669 | G14 | | | | | |
| | 3670 | H14 | | | | | |
| | 3671 | G14 | | | | | |
| | 3672 | H14 | | | | | |
| | 3673 | G14 | | | | | |
| | 3674 | I 14 | | | | | |
| | 3675 | G15 | | | | | |
| | 3676 | H15 | | | | | |
| | 3677 | G15 | | | | | |
| I | 3678 | H15 | | | | | |
| | 3679 | G16 | | | | | |
| | 3680 | H16 | | | | | |
| | 3681 | F16 | | | | | |
| | 3682 | J16 | | | | | |
| | 3701 | B14 | | | | | |
| | 3702 | B14 | | | | | |
| | 3703 | C15 | | | | | |
| | 3704 | I 15 | | | | | |
| J | 3705 | D13 | | | | | |
| | 3706 | G15 | | | | | |
| | 3707 | H15 | | | | | |
| | 3708 | I 15 | | | | | |
| | 3736 | E11 | | | | | |
| | 3737 | E11 | | | | | |
| | 3738 | E12 | | | | | |
| | 3739 | F13 | | | | | |
| | 3740 | F13 | | | | | |
| | 3743 | I 12 | | | | | |
| | 3744 | I 13 | | | | | |
| | 3745 | I 13 | | | | | |
| | 3747 | D13 | | | | | |
| | 3748 | B13 | | | | | |
| | 3776 | F12 | | | | | |
| K | 3801 | K 3 | | | | | |

PRS.04302

## ELECTRICAL PARTSLIST SERVO & DECODER PANEL

### Miscellaneous

| | | |
|---|---|---|
| BU–1 | 4822 265 20291 | Mains inlet |
| BU–2 | 4822 267 30881 | Cinch socket 2P |
| BU–3 | 4822 267 30743 | Headphone socket |
| SK–0 | 4822 276 11309 | Mains switch |
| SK–2 | 4822 276 12523 | Tact switch (4.3mm) |
| | 4822 256 30274 | Fuse holder |
| | 4822 492 63076 | Clamping spring |

### Crystal

| | | |
|---|---|---|
| 1502 | 4822 242 71349 | 11.289 600 MHz Quartz Crystal |
| 1503 | 4822 242 70831 | 4.00 MHz Ceramic Resonator |

### ⊣⊢

| | | |
|---|---|---|
| 2500 | 4822 126 10005 | 3n3 400V 20% Ceramic disc cap. |
| 2501 | 4822 122 33147 | 22nF 20% |
| 2503 | 4822 122 33147 | 22nF 20% |
| 2504 | 4822 122 31727 | 470pF 5% 63V |
| 2506 | 4822 122 10166 | 22nF 30% 16V |
| 2507 | 4822 122 31644 | 2n2 10% 63V |
| 2508 | 5322 121 42491 | 47nF 5% 100V |
| 2509 | 4822 122 31765 | 100pF 5% 50V |
| 2510 | 4822 122 32442 | 10nF 50V |
| 2511 | 4822 122 31746 | 1000pF 5% 50V |
| 2513 | 4822 121 42245 | 220nF 10% 63V |
| 2514 | 4822 121 51252 | 470nF 5% 100V |
| 2515 | 4822 122 31746 | 1000pF 5% 50V |
| 2519 | 4822 124 22027 | 47µF 20% 25V |
| 2520 | 4822 122 31965 | 220pF 5% 63V |
| 2521 | 4822 124 40272 | 33µF 16V |
| 2522 | 4822 122 33147 | 22nF 20% |
| 2523 | 4822 124 40257 | 220µF 20% 63V |
| 2524 | 4822 122 33147 | 22nF 20% |
| 2525 | 4822 122 33147 | 22nF 20% |
| 2526 | 4822 122 33147 | 22nF 20% |
| 2530 | 4822 121 51321 | 8µ2 1% 63V |
| 2531 | 4822 121 51321 | 8µ2 1% 63V |
| 2532 | 4822 124 40272 | 33µF 20% 16V |
| 2534 | 5322 121 42661 | 330nF 5% 63V |
| 2535 | 5322 122 31848 | 33nF 10% 63V |
| 2536 | 5322 122 31848 | 33nF 10% 63V |
| 2537 | 4822 121 42245 | 220nF 10% 63V |
| 2538 | 4822 121 42245 | 220nF 10% 63V |
| 2540 | 4822 124 41583 | 0µ68 Bipolar Elco |
| 2542 | 4822 122 33147 | 22nF 20% |
| 2545 | 4822 122 33104 | 100nF 10% 63V |
| 2546 | 4822 122 33147 | 22nF 20% |
| 2550 | 5322 121 42491 | 47nF 5% 100V |
| 2560 | 4822 121 51314 | 4n7 5% 50V |
| 2561 | 4822 121 51252 | 470nF 5% 100V |
| 2562 | 5322 121 42661 | 330nF 5% 63V |
| 2563 | 4822 122 33104 | 100nF 10% 63V |
| 2566 | 4822 122 33147 | 22nF 20% |
| 2570 | 4822 122 31644 | 2n2 10% 63V |
| 2572 | 5322 121 42661 | 330nF 5% 63V |
| 2574 | 4822 122 31759 | 18nF 10% |
| 2600 | 4822 122 31772 | 47pF 5% 50V |

### ⊣⊢

| | | |
|---|---|---|
| 2601 | 4822 122 31644 | 2n2 10% 63V |
| 2602 | 4822 121 51252 | 470nF 5% 100V |
| 2604 | 4822 124 41576 | 2µ2 20% 50V |
| 2607 | 4822 124 40272 | 33µF20% 16V |
| 2608 | 4822 122 33147 | 22nF 20% |
| 2609 | 4822 122 33147 | 22nF 20% |
| 2610 | 4822 124 20688 | 33µF 50% 16V |
| 2611 | 4822 122 33147 | 22nF 20% |
| 2612 | 4822 124 40272 | 33µF 20% 16V |
| 2620 | 4822 122 33147 | 22nF 20% |
| 2621 | 4822 122 33147 | 22nF 20% |
| 2622 | 4822 124 22031 | 4µ7 20% 63V |
| 2623 | 4822 122 31772 | 47pF 5% 50V |
| 2624 | 4822 122 31772 | 47pF 5% 50V |
| 2630 | 4822 122 31772 | 47pF 5% 50V |
| 2631 | 4822 122 31772 | 47pF 5% 50V |
| 2632 | 4822 124 40272 | 33µF 20% 16V |
| 2633 | 4822 122 33147 | 22nF 20% |
| 2634 | 4822 124 40272 | 33µF 20% 16V |
| 2635 | 4822 122 33147 | 22nF 20% |
| 2636 | 4822 122 31775 | 680pF 5% 50V |
| 2638 | 4822 122 10166 | 22nF 30% 16V |
| 2640 | 4822 122 33147 | 22nF 20% |
| 2641 | 4822 122 32183 | 56nF 10% 50V |
| 2642 | 4822 122 32183 | 56nF 10% 50V |
| 2644 | 4822 122 33147 | 22nF 20% |
| 2645 | 4822 122 33147 | 22nF 20% |
| 2646 | 4822 122 33104 | 100nF10% 63V |
| 2651 | 4822 122 33147 | 22nF 20% |
| 2652 | 4822 122 33147 | 22nF 20% |
| 2653 | 4822 124 40272 | 33µF 20% 16V |
| 2654 | 4822 124 41527 | 47µF 25V |
| 2664 | 4822 121 51111 | 2n4 2% 250V |
| 2665 | 4822 121 51111 | 2n4 2% 250V |
| 2668 | 4822 121 43066 | 1nF 1% 400V |
| 2669 | 4822 121 43066 | 1nF 1% 400V |
| 2670 | 4822 124 41528 | 100µF 25V |
| 2671 | 4822 124 41528 | 100µF 25V |
| 2673 | 4822 124 22339 | 100µF 20% 16V Bipolar |
| 2674 | 4822 124 41528 | 100µF 25V |
| 2675 | 4822 124 41528 | 100µF 25V |
| 2676 | 4822 122 33104 | 100nF 10% 63V |
| 2677 | 4822 122 33104 | 100nF 10% 63V |
| 2678 | 4822 122 33104 | 100nF 10% 63V |
| 2679 | 4822 122 33104 | 100nF 10% 63V |
| 2680 | 4822 122 33104 | 100nF 10% 63V |
| 2681 | 4822 122 33104 | 100nF 10% 63V |
| 2682 | 4822 122 33104 | 100nF 10% 63V |
| 2683 | 4822 122 33104 | 100nF 10% 63V |
| 2684 | 4822 122 33104 | 100nF 10% 63V |
| 2685 | 4822 122 33104 | 100nF 10% 63V |
| 2686 | 4822 122 33104 | 100nF 10% 63V |
| 2687 | 4822 122 33104 | 100nF 10% 63V |
| 2688 | 4822 122 33104 | 100nF 10% 63V |
| 2689 | 4822 122 33104 | 100nF 10% 63V |
| 2690 | 4822 124 41573 | 470µF 20% 35V |
| 2691 | 4822 121 51252 | 470nF 5% 100V |
| 2692 | 5322 121 42386 | 100nF 5% 63V |
| 2693 | 4822 122 33147 | 22nF 20% |

### ⊣⊢

| | | |
|---|---|---|
| 2695 | 4822 124 41558 | 10µF 20% 25V Bipolar |
| 2696 | 4822 121 51225 | 18nF 2% 63V |
| 2697 | 4822 121 51361 | 5n6 2% 160V |
| 2698 | 4822 121 51361 | 5n6 2% 160V |
| 2699 | 4822 121 51225 | 18nF 2% 63V |
| 2700 | 4822 124 22339 | 100µF 20% 16V Bipolar |
| 2702 | 4822 124 22337 | 22µF 20% 63V |
| 2703 | 4822 124 41594 | 330µF 20% 35V |
| 2704 | 4822 124 41527 | 47µF 25V |
| 2705 | 4822 122 33147 | 22nF 20% |
| 2706 | 4822 122 33147 | 22nF 20% |
| 2707 | 4822 124 41591 | 6800µF 20% 16V |
| 2708 | 4822 124 40272 | 33µF20% 16V |
| 2709 | 4822 122 33147 | 22nF 20% |
| 2710 | 4822 122 33147 | 22nF 20% |
| 2711 | 4822 124 41571 | 1000µF 20% 16V |
| 2712 | 4822 124 40272 | 33µF 20% 16V |
| 2713 | 4822 124 41573 | 470µF 20% 35V |
| 2714 | 4822 124 41527 | 47µF 25V |
| 2715 | 5322 121 42386 | 100nF 5% 63V |

### ⊣□⊢

| | | |
|---|---|---|
| 3501 | 5322 111 90111 | 4k7 2% 0,125W |
| 3502 | 4822 111 90214 | 100k 2% 0,125W |
| 3503 | 4822 111 30499 | 4Ω7 5% 0,33W |
| 3504 | 4822 111 30499 | 4Ω7 5% 0,33W |
| 3505 | 4822 111 90253 | 12k 2% 0,125W |
| 3506 | 4822 116 52389 | 100Ω 5% 0,5W |
| 3507 | 5322 111 90092 | 1k 2% 0,125W |
| 3508 | 4822 111 90512 | 24k 2% 0,125W |
| 3509 | 4822 111 90572 | 5k6 2% 0,125W |
| 3510 | 4822 111 90249 | 10k 2% 0,125W |
| 3520 | 4822 101 10685 | 4k7 20% lin 0,05W trimpot |
| 3521 | 4822 116 52849 | 220Ω 1% 0,6W |
| 3522 | 4822 111 30515 | 18Ω 5% 0,33W |
| 3523 | 4822 111 30511 | 12Ω 5% 0,33W |
| 3524 | 5322 111 90091 | 100Ω 2% 0,125W |
| 3533 | 5322 111 90268 | 5k1 2% 0,125W |
| 3534 | 4822 111 90197 | 220k 2% 0,125W |
| 3535 | 4822 116 53081 | 12k 1% 0,6W |
| 3539 | 4822 111 90251 | 22k 2% 0,125W |
| 3540 | 4822 111 30499 | 4Ω7 5% 0,33W |
| 3541 | 4822 111 90544 | 6k8 2% 0,125W |
| 3542 | 4822 111 90357 | 33Ω 2% 0,125W |
| 3543 | 4822 111 90544 | 6k8 2% 0,125W |
| 3545 | 4822 111 30483 | 1Ω 5% 0,33W |
| 3546 | 4822 111 30483 | 1Ω 5% 0,33W |
| 3551 | 5322 111 90099 | 150k 2% 0,125W |
| 3552 | 5322 111 90101 | 1k8 2% 0,125W |
| 3555 | 4822 111 90238 | 180k 5% 0,25W |
| 3557 | 4822 111 90197 | 220k 2% 0,125W |
| 3560 | 4822 111 91494 | 11k 2% |
| 3561 | 4822 116 90417 | 150k 2% |
| 3562 | 4822 111 90568 | 120k 2% 0,125W |
| 3563 | 4822 111 90573 | 56k 2% 0,125W |
| 3564 | 4822 111 91495 | 160k 2% |
| 3565 | 5322 111 90105 | 27Ω 2% 0,125W |
| 3566 | 4822 111 90186 | 22Ω 2% 0,125W |
| 3567 | 4822 111 90575 | 82k 2% 0,125W |
| 3568 | 4822 100 20522 | 22k 20% lin 0,05W trimpot |
| 3569 | 4822 111 90368 | 680k 2% 0,125W |
| 3574 | 5322 111 90267 | 33k 2% 0,125W |
| 3575 | 5322 111 90111 | 4k7 2% 0,125W |
| 3576 | 4822 116 52848 | 200k 1% 0,6W |
| 3578 | 4822 111 90575 | 82k 2% 0,125W |

### ⊣□⊢

| | | |
|---|---|---|
| 3579 | 4822 116 90417 | 150k 2% |
| 3580 | 4822 116 52426 | 4k7 5% 0,5W |
| 3581 | 4822 116 53105 | 3k3 1% 0,6W |
| 3582 | 4822 111 90572 | 5k6 2% 0,125W |
| 3584 | 4822 111 91492 | 91k 2% |
| 3585 | 4822 111 90214 | 100k 2% 0,125W |
| 3586 | 4822 111 90368 | 680k 2% 0,125W |
| 3588 | 4822 116 52472 | 47k 5% 0,5W |
| 3589 | 5322 111 90111 | 4k7 2% 0,125W |
| 3591 | 5322 111 90096 | 1k2 2% 0,125W |
| 3600 | 4822 111 90248 | 2k2 2% 0,125W |
| 3602 | 4822 111 90251 | 22k 2% 0,125W |
| 3603 | 4822 111 90371 | 75Ω 2% 0,125W |
| 3604 | 4822 111 30499 | 4Ω7 5% 0,33W |
| 3605 | 5322 111 90265 | 1k6 2% 0,125W |
| 3607 | 4822 111 90571 | 3k9 2% 0,125W |
| 3609 | 4822 111 30499 | 4Ω7 5% 0,33W |
| 3610 | 4822 111 90373 | 9k1 2% 0,125W |
| 3611 | 4822 111 90366 | 620Ω 2% 0,125W |
| 3613 | 4822 111 90251 | 22k 2% 0,125W |
| 3619 | 4822 111 90251 | 22k 2% 0,125W |
| 3621 | 4822 111 90238 | 180k 5% 0,25W |
| 3622 | 4822 111 90543 | 47k 2% 0,125W |
| 3623 | 4822 111 90238 | 180k 5% 0,25W |
| 3624 | 4822 111 90248 | 2k2 2% 0,125W |
| 3625 | 4822 111 90249 | 10k 2% 0,125W |
| 3626 | 4822 111 90249 | 10k 2% 0,125W |
| 3627 | 4822 111 30499 | 4Ω7 5% 0,33W |
| 3628 | 4822 111 90251 | 22k 2% 0,125W |
| 3629 | 4822 111 90197 | 220k 2% 0,125W |
| 3630 | 4822 111 90251 | 22k 2% 0,125W |
| 3638 | 4822 111 90251 | 22k 2% 0,125W |
| 3639 | 4822 111 90251 | 22k 2% 0,125W |
| 3640 | 4822 111 90251 | 22k 2% 0,125W |
| 3643 | 4822 111 90251 | 22k 2% 0,125W |
| 3645 | 5322 111 90111 | 4k7 2% 0,125W |
| 3646 | 4822 111 90251 | 22k 2% 0,125W |
| 3647 | 4822 111 90251 | 22k 2% 0,125W |
| 3650 | 4822 111 30483 | 1Ω 5% 0,33W |
| 3651 | 4822 111 90197 | 220k 2% 0,125W |
| 3652 | 4822 111 30499 | 4Ω7 5% 0,33W |
| 3653 | 4822 116 52428 | 560Ω 5% 0,5W |
| 3654 | 5322 111 90118 | 8k2 2% 0,125W |
| 3655 | 4822 111 30499 | 4Ω7 5% 0,33W |
| 3657 | 4822 111 30499 | 4Ω7 5% 0,33W |
| 3658 | 4822 111 30508 | 10Ω 5% 0,33W |
| 3659 | 4822 116 52426 | 4k7 5% 0,5W |
| 3665 | 5322 116 53478 | 1k5 1% 0,6W |
| 3666 | 5322 116 53478 | 1k5 1% 0,6W |
| 3667 | 4822 111 30511 | 12Ω NFR 0,25W |
| 3668 | 4822 111 30511 | 12Ω NFR 0,25W |
| 3669 | 4822 116 90271 | 2k4 2% |
| 3670 | 4822 116 90271 | 2k4 2% |
| 3671 | 4822 116 90271 | 2k4 2% |
| 3672 | 4822 116 90271 | 2k4 2% |
| 3673 | 4822 111 30511 | 12Ω NFR 0,25W |
| 3674 | 4822 111 30511 | 12Ω NFR 0,25W |
| 3675 | 4822 111 90249 | 10k 2% 0,125W |
| 3676 | 4822 111 90249 | 10k 2% 0,125W |
| 3677 | 5322 111 90091 | 100Ω 2% 0,125W |
| 3678 | 5322 111 90091 | 100Ω 2% 0,125W |
| 3679 | 5322 111 90091 | 100Ω 2% 0,125W |
| 3680 | 5322 111 90091 | 100Ω 2% 0,125W |
| 3681 | 5322 116 80491 | 150Ω 5% |
| 3682 | 5322 116 80431 | 150Ω 5% |
| 3690 | 4822 111 90253 | 12k 2% |

| | | |
|---|---|---|
| 3691 | 4822 111 90253 | 12k 2% |
| 3692 | 4822 111 90253 | 12k 2% |
| 3693 | 5322 116 80445 | 4k7 5% |
| 3694 | 4822 111 90253 | 12k 2% |
| 3695 | 5322 116 80426 | 100Ω |
| 3696 | 4822 111 30513 | 15Ω Safety Resistor |
| 3697 | 4822 111 30513 | 15Ω Safety Resistor |
| 3701 | 5322 111 90111 | 4k7 2% 0,125W |
| 3702 | 4822 111 90425 | 5M6 5% 0,125W |
| 3703 | 5322 111 90108 | 39k 2% 0,125W |
| 3704 | 5322 111 90096 | 1k2 2% 0,125W |
| 3705 | 4822 111 90573 | 56k 2% 0,125W |
| 3706 | 5322 111 90096 | 1k2 2% 0,125W |
| 3707 | 5322 111 90096 | 1k2 2% 0,125W |
| 3708 | 5322 111 90096 | 1k2 2% 0,125W |
| 3710 | 5322 111 90099 | 150k 2% 0,125W |
| 3720 | 5322 111 90092 | 1k 2% 0,125W |
| 3721 | 4822 111 90543 | 47k 2% 0,125W |
| 3722 | 4822 111 30499 | 4Ω7 5% 0,33W |
| 3724 | 4822 116 53081 | 12k 1% 0,6W |
| 3725 | 4822 111 90253 | 12k 2% 0,125W |
| 3726 | 4822 111 90251 | 22k 5% |
| 3728 | 4822 111 90572 | 5k6 2% 0,125W |
| 3729 | 4822 116 53081 | 12k 0423 ER |
| 3730 | 4822 111 90253 | 12k 2% 0,125W |
| 3731 | 4822 111 90186 | 22Ω 2% 0,125W |
| 3732 | 4822 116 52849 | 220Ω 1% 0.6W |
| 3736 | 4822 111 90214 | 100k 2% 0,125W |
| 3737 | 4822 111 90249 | 10k 2% 0,125W |
| 3738 | 4822 111 90214 | 100k 2% 0,125W |
| 3739 | 4822 111 90425 | 5M6 5% 0,125W |
| 3740 | 4822 116 52864 | 820Ω 1% 0,6W |
| 3743 | 4822 111 90425 | 5M6 5% 0,125W |
| 3744 | 4822 116 52864 | 820Ω 1% 0,6W |
| 3745 | 4822 111 90425 | 5M6 5% 0,125W |
| 3747 | 4822 111 90216 | 30k |
| 3748 | 4822 111 90571 | 3k9 2% 0,125W |
| 3775 | 5322 111 90111 | 4k7 2% 0,125W |
| 3776 | 4822 111 90425 | 5M6 5% 0,125W |
| 3779 | 5322 111 90306 | 750Ω 2% 0,125W |
| 3785 | 4822 116 52493 | 1M 5% 0,25W |
| 3786 | 4822 116 81165 | 1M |
| 3787 | 5322 116 80426 | 100Ω |

**jumper**

| | | |
|---|---|---|
| 3801 | 4822 111 90163 | jumper |
| 3802 | 4822 111 90163 | jumper |
| 3803 | 4822 111 90163 | jumper |
| 3804 | 4822 111 90163 | jumper |
| 3805 | 4822 111 90163 | jumper |
| 3808 | 4822 111 90163 | jumper |
| 3809 | 4822 111 90163 | jumper |
| 3810 | 4822 111 90163 | jumper |
| 3811 | 4822 111 90163 | jumper |
| 3812 | 4822 111 90163 | jumper |
| 3813 | 4822 111 90163 | jumper |
| 3814 | 4822 111 90163 | jumper |
| 3818 | 4822 111 90163 | jumper |
| 3821 | 4822 111 90163 | jumper |
| 3822 | 4822 111 90163 | jumper |
| 3823 | 4822 111 90163 | jumper |
| 3824 | 4822 111 90163 | jumper |
| 3825 | 4822 111 90163 | jumper |
| 3826 | 4822 111 90163 | jumper |
| 3827 | 4822 111 90163 | jumper |
| 3828 | 4822 111 90163 | jumper |
| 3829 | 4822 111 90163 | jumper |

**jumper**

| | | |
|---|---|---|
| 3830 | 4822 111 90163 | jumper |
| 3831 | 4822 111 90163 | jumper |
| 3833 | 4822 111 90163 | jumper |
| 3834 | 4822 111 90163 | jumper |
| 3835 | 4822 111 90163 | jumper |
| 3836 | 4822 111 90163 | jumper |
| 3837 | 4822 111 90163 | jumper |
| 3838 | 4822 111 90163 | jumper |
| 3839 | 4822 111 90163 | jumper |
| 3840 | 4822 111 90163 | jumper |
| 3841 | 4822 111 90163 | jumper |
| 3842 | 4822 111 90163 | jumper |
| 3843 | 4822 111 90163 | jumper |
| 3844 | 4822 111 90163 | jumper |
| 3845 | 4822 111 90163 | jumper |
| 3847 | 4822 111 90163 | jumper |
| 3848 | 4822 111 90163 | jumper |
| 3849 | 4822 111 90163 | jumper |
| 3850 | 4822 111 90163 | jumper |
| 3852 | 4822 111 90163 | jumper |
| 3853 | 4822 111 90163 | jumper |
| 3854 | 4822 111 90163 | jumper |
| 3855 | 4822 111 90163 | jumper |
| 3856 | 4822 111 90163 | jumper |
| 3857 | 4822 111 90163 | jumper |
| 3858 | 4822 111 90163 | jumper |
| 3859 | 4822 111 90163 | jumper |
| 3860 | 4822 111 90163 | jumper |
| 3861 | 4822 111 90163 | jumper |
| 3862 | 4822 111 90163 | jumper |

| | | |
|---|---|---|
| 5502 | 4822 157 53141 | coil 470µH |
| 5503 | 4822 157 53141 | coil 470µH |

**semi conductor**

| | | |
|---|---|---|
| 6500 | 4822 209 72587 | TCA0372DP2 |
| 6501 | 4822 209 73234 | TDA8808T/C3 |
| 6502 | 4822 130 44121 | BC338 |
| 6503 | 4822 209 73235 | TDA8809T/C2 |
| 6504 | 4822 209 72587 | TCA0372DP2 |
| 6505 | 4822 130 34173 | BZX79-B5V6 |
| 6506 | 4822 130 34173 | BZX79-B5V6 |
| 6510 | 4822 130 31456 | BZV85-C5V1 |
| 6512 | 4822 209 83274 | NJM4560D |
| 6516 | 5322 130 42012 | BC858 |
| 6517 | 5322 130 42012 | BC858 |
| 6519 | 5322 130 30684 | 1N4002 |
| 6520 | 4822 130 42131 | BF550 |
| 6523 | 4822 209 70422 | MN4264-15 |
| 6526 | 4822 130 61207 | BC848 |
| 6527 | 5322 130 42012 | BC858 |
| 6530 | 4822 209 61428 | MC68HC05C9P/SC409010 |
| 6531 | 4822 130 42675 | BC818 |
| 6535 | 4822 209 83163 | LM833N |
| 6536 | 4822 209 83163 | LM833N |
| 6537 | 5322 130 30684 | 1N4002 |
| 6538 | 5322 130 30684 | 1N4002 |
| 6540 | 4822 209 72545 | SAA7220P/B |
| 6541 | 4822 209 72544 | TDA1541A/N2 |
| 6542 | 4822 130 42675 | BC818 |

| semi conductor | | |
|---|---|---|
| 6543 | 4822 130 42675 | BC818 |
| 6544 | 4822 130 42675 | BC818 |
| 6545 | 4822 130 42675 | BC818 |
| 6547 | 5322 130 30684 | 1N4002 |
| 6548 | 5322 130 30684 | 1N4002 |
| 6549 | 4822 209 61759 | SAA7310GP/S5 |
| 6550 | 5322 130 30684 | 1N4002 |
| 6551 | 5322 130 30684 | 1N4002 |
| 6552 | 4822 130 30621 | 1N4148 |
| 6553 | 4822 130 30621 | 1N4148 |
| 6554 | 4822 130 42513 | BC858C |
| 6555 | 4822 130 31981 | BZX55-C3V9 |
| 6556 | 4822 130 61207 | BC848 |
| 6557 | 4822 130 30621 | 1N4148 |
| 6558 | 4822 130 40938 | BC548 |
| 6559 | 4822 130 61207 | BC848 |
| 6561 | 4822 209 60803 | SN74LS08D |
| 6562 | 4822 130 61207 | BC848 |
| 6563 | 5322 130 42012 | BC858 |
| 6564 | 4822 130 42633 | BSR56 |
| 6565 | 4822 130 42633 | BSR56 |
| 6568 | 4822 130 61207 | BC848 |

| semiconductor | | |
|---|---|---|
| 6571 | 4822 209 60772 | X24C16 |
| 6572 | 4822 130 34195 | BZX55-C13 |
| 6575 | 4822 130 40823 | BD135 |
| 6576 | 4822 130 40824 | BD136 |
| 6577 | 4822 209 80808 | MC78M15CT |
| 6580 | 5322 130 30684 | 1N4002 |
| 6581 | 5322 130 30684 | 1N4002 |
| 6582 | 5322 130 30684 | 1N4002 |
| 6583 | 5322 130 30684 | 1N4002 |
| 6584 | 5322 130 30684 | 1N4002 |
| 6585 | 5322 130 30684 | 1N4002 |
| 6586 | 5322 130 30684 | 1N4002 |
| 6587 | 5322 130 30684 | 1N4002 |
| 6590 | 4822 209 80808 | MC78M15CT |
| 6591 | 4822 209 71579 | TY40408 = MC7805CT selected |
| 6592 | 5322 209 11222 | MC7905CT |
| 6593 | 5322 130 41899 | MC7915CT |